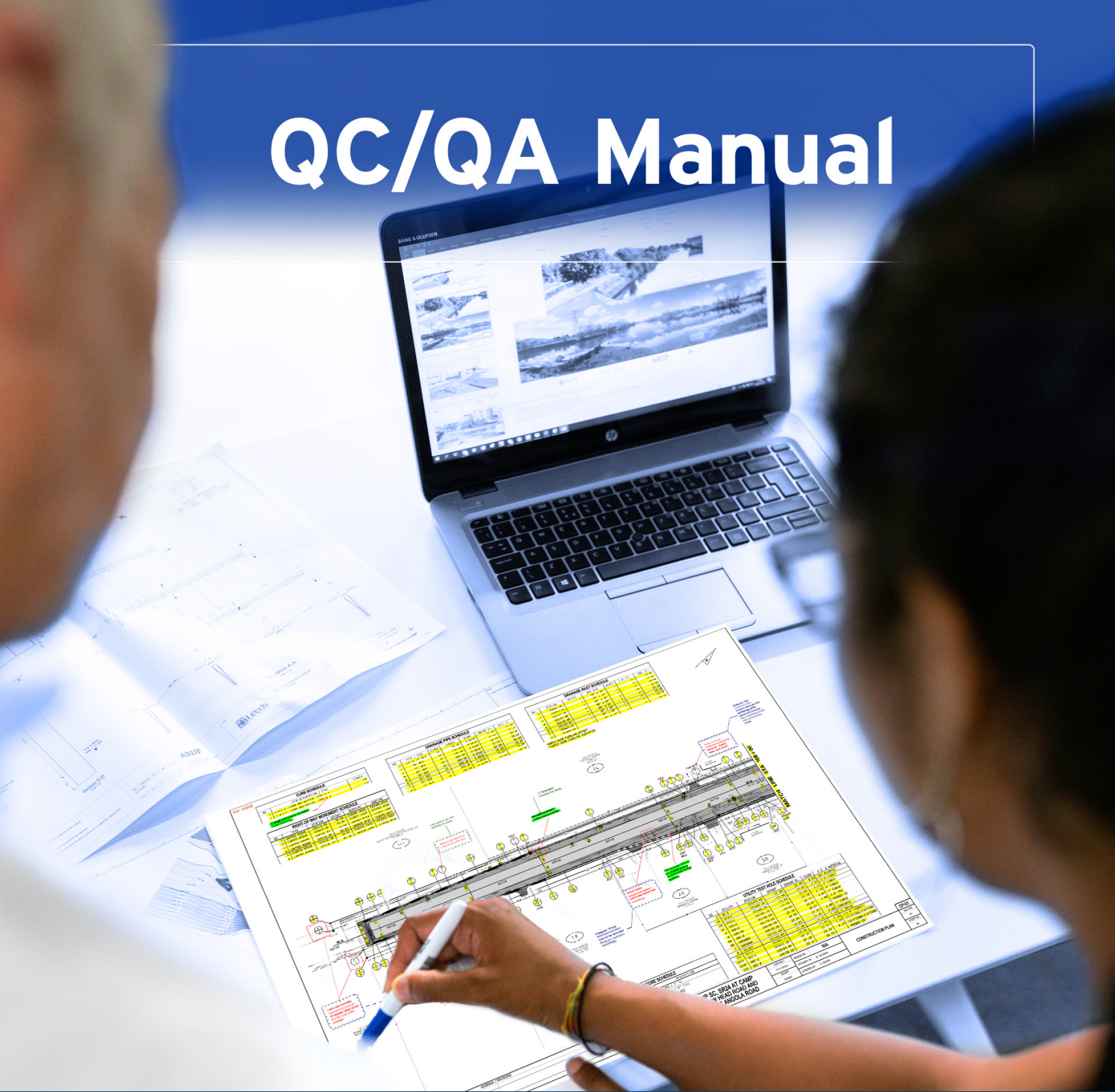


QC/QA Manual



2022 Edition





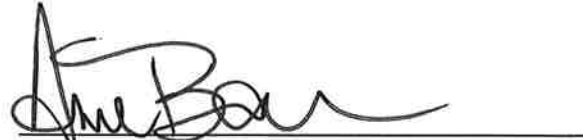
DeIDOT QC/QA Manual 2022 Edition

Recommended By:




CEO of Delaware Transit Corporation

Recommended By:



Director of Maintenance and Operations

Recommended By:



Director of Planning

Recommended By:



Chief Engineer

Approved For Use:



Cabinet Secretary

Preface

The 2022 DeIDOT QC/QA Manual is the result of an effort that began in 2019 to review the Department's Quality Control and Quality Assurance (QC/QA) procedures for contract plans, specifications, and other documents that are advertised by the Department. This effort began by investigating the common QC/QA methods employed by the Department's staff and the contracted professionals under agreement with the Department. This initial investigation highlighted the need to create consistent QC/QA practices across the various divisions of the Department that advertise plans, specifications, or other documents. In 2021, the Department formed a QC/QA Manual Committee which was tasked with formalizing QC/QA procedures that could be applied throughout the Department. The QC/QA Manual Committee utilized the results of the previously conducted investigation and performed additional investigation into the national state of the practice for performing QC/QA on engineering work products. The QC/QA Manual Committee ultimately identified several best practices for incorporation and then interviewed Department staff to further refine the QC/QA procedures to best blend into the Department's existing workflow. This manual provides a framework of QC/QA practices which will further the Department in its mission to achieve excellence in transportation for every trip, every mode, every dollar, and everyone.

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2021-2022

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Abbreviations and Definitions

Disposition Document – A file which tracks responses to all received quality control check comments. It can take the form of a “Comment Matrix” in a spreadsheet, a list of comments vs. corresponding responses in a text document or email, or (as is most common during QC) annotated responses adjacent to the applicable comments on a “red-line” markup.

Endorser – The individual who signs a finished work product prior to advertisement asserting that it is “Ready to Advertise.” The Endorser must be the Division Director responsible for the programming and management of the project or their designee.

Engineer of Record – The individual who creates, or causes to be created, engineering work products. The Engineer of Record is in responsible charge of the project design and construction plan development, will meet the standard of care, and will comply with all applicable engineering standards, guidelines, policies, regulations, and laws for their project. The Engineer of Record may be responsible for development of all the plans or only portions of plan sets. Complex projects may have an Engineer of Record for each section of the plan set prepared by different engineering disciplines such as roadway, bridge, traffic, etc. See [Policy Implement D-04 Engineering Plan Approval Policy](#) for additional discussion.

PS&E – An acronym for plans, specifications, and estimate. The term is generally used to describe all of the elements of a construction project that will become the contract between the advertising agency and the awarded contractor.

QC/QA Certification Memorandum – A written statement to the Division Director that appropriate quality controls were followed to ensure the project was designed and plans were prepared in accordance with governing standards by properly licensed professionals.

QC/QA Plan – A strategy typically established at the beginning of a task which identifies resources to assist in the QC/QA process.

Quality Control (QC) – Involves a detailed review of a work product by a second party qualified to conduct the review. QC is performed on each work product making up the various component pieces of a larger deliverable.

Quality Assurance (QA) – Involves reviewing work products prior to submission to verify the appropriate QC processes were followed, that it is complete, accurate, and high-quality, and that it meets the Standard of Care. QA is performed at a global level across a project by a third party qualified to conduct the review. It may involve a multi-disciplinary team on complex projects.

Self-Check – A check for accuracy and completeness that is performed by the staff member creating the work product.

Standard of Care – The degree of skill and care ordinarily used by competent practitioners of the same professional discipline under similar circumstances, taking into consideration the contemporary state of the practice and the project conditions.

Work Product – The items that are advertised for bid by the Department as well as any subordinate piece or intermediate work completed or developed in support of the items that are advertised for bid by the Department. Work products include but are not limited to the following examples:

- Calculations
- Plan Sheets
- Specifications
- Technical Documents/Reports/Memos/Letters
- Work Orders assigned through an ID/IQ Agreement
- 3D Engineered Models

Chapter 1 Introduction

The Delaware Department of Transportation (DelDOT) has developed this manual to further the Department in its mission to achieve excellence in transportation for every trip, every mode, every dollar, and everyone by establishing uniform and consistent quality control and quality assurance procedures that can be applied across the Department and throughout the project development process. Adherence to the procedures included in this manual will promote a consistent process and facilitate the creation of accurate, high-quality, complete, and clear work products which in turn decreases errors and reduces risk.

The project development process is a dynamic workflow which generally varies based upon the Department program developing the contract as well as the complexity of the project and the number of project stakeholders. The Department's QC/QA process and procedures may likewise vary across the Department due to these variations in the project development process; however, the QC/QA methodology and overall emphasis on the development of accurate, high-quality, complete, and clear work products remains the same. The procedures contained in this manual have been written specifically to apply to the Division of Transportation Solutions (DOTS); however, the methodology and associated guidance contained herein apply to all Divisions of the Department that develop contract plans, specifications, or other documents which are advertised by the Department.

This manual has been specifically developed for the Department; however, the manual is also intended to serve as a resource for contracted professionals under agreement with the Department to develop contract plans, specifications, or other documents which will be advertised by the Department. The contents of this manual do not supersede the contracted entity's company or agency QC/QA policies or procedures and, in all cases, the contracted professionals are to follow their own company or agency QC/QA policies or procedures. All task proposals submitted to the Department should have QC/QA hours accounted for and assigned to each individual subtask to make for easier Department review and verification.

Chapter 2 Methodology

This chapter defines the general methodology in which work products are developed and subsequently quality control checked and quality assurance reviewed. The Project Manager responsible for the work is also responsible for ensuring that the guidelines contained in this manual are followed on every project. The Project Manager should consider creating a project specific QC/QA plan for checking the work as early as feasible in the project development process. A QC/QA Plan Template is included as [Appendix D](#) in this manual. Considerations for a project specific QC/QA plan include the individual elements that will require review, the complexity of the work, and the availability of qualified staff. It is recommended that the Project Manager create a pool of qualified individuals to select from to ensure timely project delivery.

The staff involved in the QC/QA process are assigned titles related to their QC/QA responsibilities. The Department defines the following titles:

- The Originator – The person who originates the work product.
- QC Checker – The person who performs the quality control check.
- QA Reviewer – The person who performs the quality assurance review.
- Project Manager – The person who oversees the implementation of the guidelines contained within this manual.

[Section 2.1](#) of this manual defines the QC/QA process and [Section 2.2](#) provides a recommended color-coding scheme to promote consistent, thorough, and easily documentable reviews. All files related to the QC/QA process are to be appropriately filed in the project’s directory for tracking and documentation purposes. Proper documentation filing will expedite any required audit process.

2.1 Stages of the QC/QA Process

In general, the development and checking of work products will follow the following sequence:

- Creation and self-check of a work product (see [Section 2.1.1](#)),
- Quality control check of a work product (see [Section 2.1.2](#)),
- Quality assurance review of a work product (see [Section 2.1.3](#)), and
- QC/QA audit (see [Section 4.2](#)).

2.1.1 Origination

All work products begin with origination or creation by the “Originator”. The qualified person should use all necessary development tools, related Department guidance documents and manuals, and Department checklists to ensure that an accurate, high-quality, complete, and clear work product is produced. A listing of pertinent Department checklists is included as [Appendix C](#) of this manual.

The Originator will perform self-checks on their work for accuracy and completeness as work is produced. Self-checks performed by the Originator are not considered to be quality control checks. The Originator and the Project Manager are to arrange for quality control checks to commence as major elements of work are considered to be satisfactorily complete by the Originator and the Project Manager.

2.1.2 Quality Control Check

The quality control check is intended as an independent review to check the Originator’s work. The person who performs the quality control check is termed the “QC Checker”. The Originator is not to serve as the

QC Checker. The quality control check should not commence until the Originator and the Project Manager consider the element of the work product being checked to be satisfactorily complete.

The QC Checker's review is to be focused on the accuracy and completeness of the work product and is to result in the QC Checker returning suggested corrections to the Originator. The QC Checker is to perform detailed checks of designs, design assumptions, plans, computations, reports, and conclusions to determine if the work product is of high-quality. The QC Checkers comments are to be detailed, clear, specific, and when possible, also include a recommended solution. Vague comments that state "verify", "wrong", or comments of a similar nature should not be made by the QC Checker.

The QC Checker is to utilize the necessary Department checklists and other Department documents to determine if the work product is thorough and complete. [Appendix A](#) of this manual contains work product specific QC procedures for the most common work products that the Department produces.

The QC Checker may be either a peer or a supervisor to the Originator but in all cases must meet the following two criteria:

1. The QC Checker is to be a qualified staff member with the appropriate level of technical knowledge, and
2. The QC Checker must not have been directly involved in the original production of the work product so as to ensure an independent, thorough, and unbiased review.

There may be multiple QC Checkers on an individual project depending upon the division of work into logical elements for checking as well as staff availability and qualifications.

The Originator is to verify all of the QC Checker's recommended corrections to ensure accuracy and appropriateness before incorporation. The Originator is to coordinate with the QC Checker to resolve any disagreement or confusion, and then implement the agreed upon changes. The Engineer of Record will determine all final resolutions when coordination between the QC Checker and Originator does not lead to consensus.

After all of the QC Checker's comments are addressed, the Originator will return a revised work product (i.e., clean copy) together with all prior markups to the QC Checker. The QC Checker will review the documents provided by the originator to ensure that the changes have been properly incorporated into the revised work product. The QC Checker may submit additional comments to the Originator in cases where the recommended changes were not incorporated sufficiently or properly. This procedure will be repeated until there are no remaining unresolved comments on the revised work products.

Department staff are not required to perform quality control checks on work products produced by contracted professionals under agreement with the Department. The contracted professionals are to perform all quality control and quality assurance procedures as dictated by their respective organization's policies and procedures prior to submission to the Department.

2.1.3 Quality Assurance Review

Quality assurance reviews are to occur logically in the project development process and, at a minimum, are to be performed as the final review ahead of a milestone submission. The person who performs the quality assurance review is termed the "QA Reviewer". The quality assurance review is intended to assess the overall completeness and quality of the entire milestone submission. The QA Reviewer is to utilize the

necessary Department checklists and other Department guidance documents to determine if the work product is thorough and complete. The QA Reviewer will also ensure that the QC/QA process described within this manual has been sufficiently followed. The QA Reviewer is to have an appropriate level of experience to assess the work product and therefore, is typically the manager of Groups or Sections within a Division. The QA Reviewer should not have been intimately involved in the development of the work product(s) to foster an “independent review” and fresh perspective. Complex projects involving multiple engineering disciplines may warrant the assignment of multiple QA Reviewers.

Qualified Department staff will perform quality assurance reviews on milestone submissions produced by contracted professionals under agreement with the Department to assess the submission’s overall completeness and quality. In all cases, the contracted professionals are to perform all quality control and quality assurance procedures as dictated by their respective organization’s policies and procedures prior to submission to the Department. The Department’s quality assurance review in no way alleviates any responsibilities or obligations of the contracted professionals that are included in their agreement with the Department.

The Department’s quality assurance review will be deemed complete upon the QA Reviewer’s signing of the Department’s Construction Plan Submission Checklist. Sections within the Department that do not follow the Construction Plan Submission Checklist may create other documentation or mechanisms to document the completion of the quality assurance review.

2.2 Color-Coding Scheme

The Department has adopted a recommended color-coding scheme to be used as part of the QC/QA process to create consistency across the Department, which in turn promotes efficient coordination and enables simplified tracking on all products developed during the project development process. The Department’s adopted color-coding scheme is as follows:

- **Yellow highlight** is used by the QC Checker to indicate agreement with the work. It is recommended that yellow highlight be flattened by the QC Checker in accordance with the procedure in [Section 2.2.1](#).
- **Red text** is used by the QC Checker to initial and date their review as well as to indicate corrections, additions, and/or questions. When the check is conducted using Bluebeam Revu, the QC Checker’s comments may be added to the disposition document by using the Markup List feature inside of Bluebeam Revu.
- **Black pencil** may be used by the QC Checker to annotate their corrections. These annotations are not considered corrections, but may offer clarification to the Originator such as a scratch computation indicating how a corrected number recommended by the QC Checker was derived.
- **Green highlight** is used by the Originator to indicate agreement and incorporation of the QC Checker’s comments.
- **Green text** is used by the Originator to initial and date their response to the check as well as to document changes made based on the QC Checker’s comments. When the check is conducted using Bluebeam Revu, the Originator’s responses to the QC Checker’s comments may be added to the disposition document by using the Markup List feature inside of Bluebeam Revu.
- **Blue text** is used by the Originator to add responses to the QC Checker’s comments for instances where the Originator disagrees with the QC Checker’s provided markups. When the check is conducted using Bluebeam Revu, the Originator’s responses to the QC Checker’s comments may be added to the disposition document by using the Markup List feature inside of Bluebeam Revu.

[Appendix I](#) of this manual includes an example disposition document which utilizes the Department’s color-coding scheme. The color-coding scheme outlined in this section may be forgone with approval of the DeIDOT Project Manager when performing QC/QA activities via Bluebeam Revu by using the Markup List feature inside of Bluebeam Revu.

2.2.1 Highlight Flattening

It is recommended that yellow highlights indicating the QC Checker’s agreement be flattened through Bluebeam Revu to make for easier markup tracking for the Originator. Flattening highlights will prevent highlights from showing up in Bluebeam Revu’s “Markup List”. Highlights can be flattened in Bluebeam Revu by selecting **Document > Flatten...** as shown in Figure 2.2.1-a.

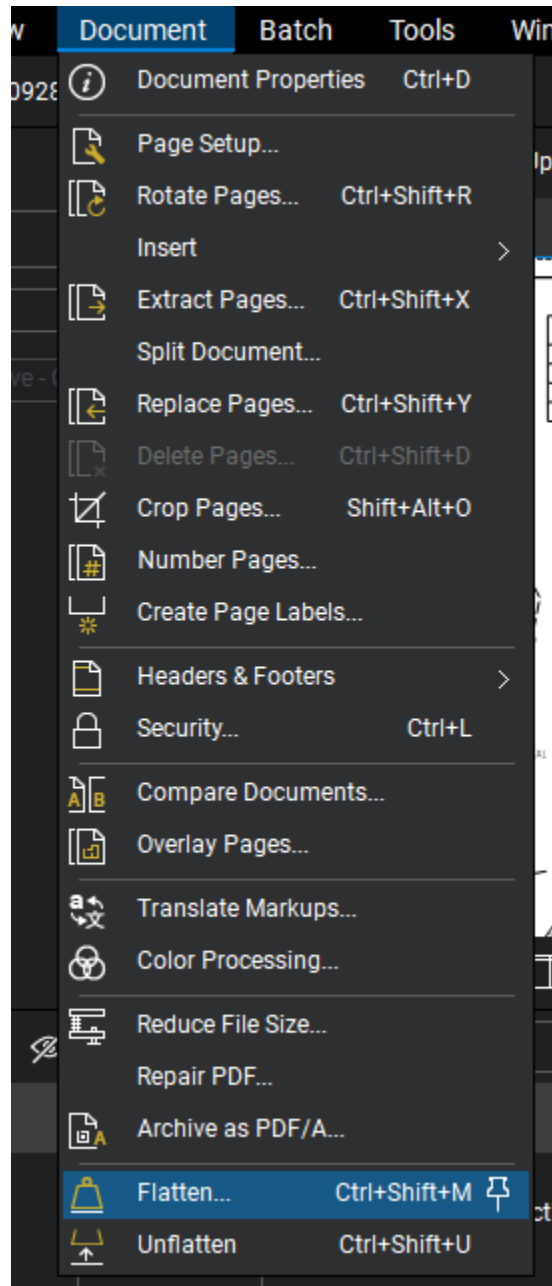


Figure 2.2.1-a: Document > Flatten...

The following dialogue will appear. Select the option to flatten **Pen and Highlight** as shown in Figure 2.2.1-b. Select other options as appropriate and then select **Flatten**.

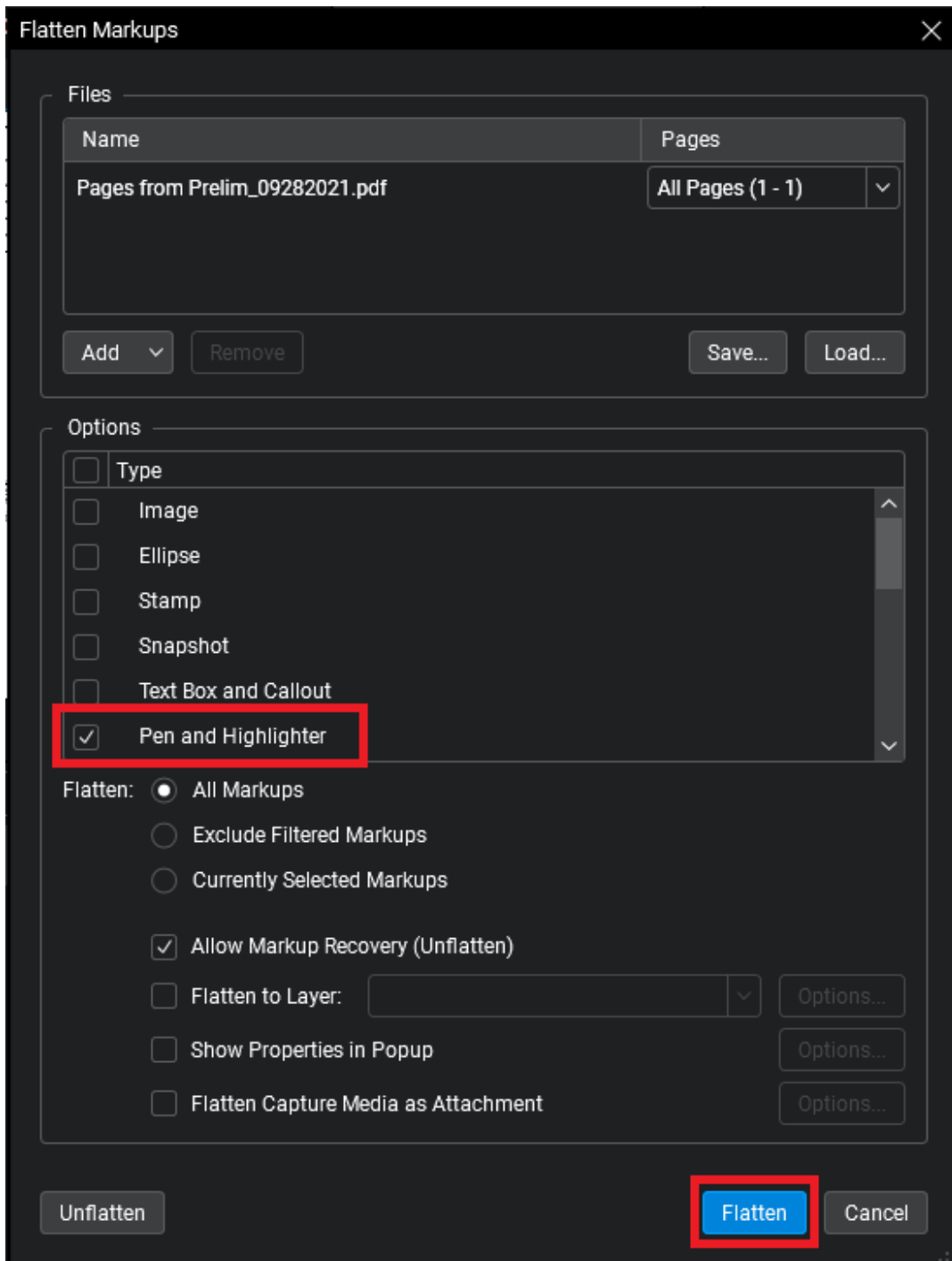


Figure 2.2.1-b: Flatten Markups Dialogue

Flattening in this manner will also flatten any pen markups made by the QC Checker. Therefore, it is recommended that a shape be placed around any pen markups made by the QC Checker to alert the Originator to the presence of the markup.

Chapter 3 Plan Reviews

Plan reviews serve an important and complementary role in the creation of accurate, high-quality, complete, and clear work products; however, plan reviews are not considered a substitute to the comprehensive and thorough QC/QA methodology outlined in [Chapter 2](#) of this manual. The plan review process and occurrence frequency will vary based upon the Department program developing the contract as well as the project's complexity and number of stakeholders. Plan reviews can be conducted as either a Department-wide Plan Review or as an Internal Plan Review defined as follows:

- **Department-wide Plan Review** – a plan review in which Departmental staff and, on occasion, external stakeholders review and comment on the milestone submission. These plan reviews are typically mandatory in the Department's project development process.
- **Internal Plan Review** – a plan review in which, typically, only staff internal to the originating section review and comment on the milestone submission. These reviews typically occur prior to Department-wide plan reviews.

The contents of this chapter are intended to describe the Division of Transportation Solutions' Department-wide Plan Review process; however, the practices and procedures described herein may be effectively applied across the entire Department. Plan reviews serve the following purposes:

- Allows support sections to review submitted work products for accuracy in each respective support section's assigned subject matter area,
- Alerts support sections to the need to commence development of work products that are triggered by a project development submission milestone, and
- Provides notice to other originator sections within the Department of upcoming improvements which promotes intra-Department coordination.

The Department's current practice is to use Studio Sessions through Bluebeam Revu to distribute and conduct plan reviews. The Department maintains several guidance documents to support this current practice:

- [Engineering Instruction PM-19-002: Electronic Plan Review through Bluebeam Revu](#) – This document provides standards for getting started with DelDOT's Electronic Plan Review process and directions for accessing Bluebeam Revu trainings.
- [Electronic Plan Review with Bluebeam Studio](#) – This document provides a general overview of Bluebeam Revu and Bluebeam Studio.
- [Engineering Instruction PM-19-003: Department Wide Electronic Plan Distributions](#) – This document provides instructions for creating Department Wide Electronic Plan Distributions through Bluebeam Studio.
- [Engineering Instruction PM-19-004: Internal Electronic Plan Distributions](#) – This document provides instructions for creating Internal Electronic Plan Distributions through Bluebeam Studio.
- [Engineering Instruction PM-20-001: Best Practice for Electronic Plan Review in Bluebeam Sessions](#) – This document covers best practices for electronic plan reviews using Bluebeam Revu.

Changes incorporated into work products require that a quality control check in accordance with the methodology described in [Chapter 2](#) of this manual occur. The quality control check should specifically verify that the change is incorporated correctly and that the change does not result in any other unforeseen negative effects.

The DeIDOT Project Manager is to work closely with the consultant to address plan review comments generated during Department review of work products developed by contracted professionals under agreement with the Department.

Chapter 4 Contract Advertisement

The period immediately before contract advertisement is a critical stage in both the project development process as well as in the QC/QA process. This time represents project team's last opportunity to make changes to the contract documents before such changes to the contract documents would require the processing of potentially costly addendums or revisions.

The Department has established two separate tasks, respectively described in [Section 4.1](#) and [Section 4.2](#), to ensure that proper QC/QA has occurred on a contract prior to advertisement. The project team must have sufficiently completed the QC/QA methodology established in [Chapter 2](#) of this manual prior to initiating the processes established in this chapter. [Appendix E](#) of this manual contains a flow chart of staff roles and tasks to be performed during the pre-PS&E process. The tasks described in [Section 4.1](#) and [Section 4.2](#) should occur concurrently with each other.

4.1 Pre-PS&E Reviews

Pre-PS&E reviews are intended to be an independent final review of the contract documents ahead of advertisement. The pre-PS&E review is intended to supplement the QC/QA methodology described in [Chapter 2](#) of this manual and to ensure that the Department is advertising a complete and thorough contract. It is important that all contract documents be complete prior to the pre-PS&E review commencing as the review is intended to check the consistency amongst all the proposed contract documents.

The pre-PS&E review requires that a staff member familiar with all aspects of design and contract administration perform the review. Originating sections typically assign the pre-PS&E review responsibility to that section's Design Resource Engineer (DRE) due to their relevant experience and expertise. Sections which do not have a Design Resource Engineer can assign this task to other qualified staff members. Pre-PS&E reviews are to be initiated by submitting the memorandum included as [Appendix F](#) of this manual to the designated Pre-PS&E reviewer.

The pre-PS&E review should focus on the accuracy, consistency, and completeness of the contract documents. Subjective or preference related comments are to be kept to a minimum. The pre-PS&E review is to result in the reviewer returning markups on the provided contract documents. It is recommended that the review be color-coded in accordance with the recommendations contained in [Section 2.2](#) of this manual. A pre-PS&E review checklist is included as [Appendix G](#) of this manual. Reviewing the contract documents in accordance with the requirements contained in [Appendix G](#) is considered to be the minimum required extent of review. Reviewers may perform additional review at their discretion.

4.2 QC/QA Audit and Contract Endorsement

All contracts that are to be advertised by the Department are to be endorsed in accordance with [Policy Implement D-04 Engineering Plan Approval Policy](#). The person who endorses the contract is termed the "Endorser". The Endorser must be the Division Director responsible for the programming and management of the project or their designee.

The Endorser will not apply their signature approving the contract for advertisement until two conditions are met:

1. The Engineer of Record must have signed and sealed the appropriate work products. The Department maintains [Engineering Instruction PM-18-002: Creating Seal, Signature and Date Stamps in Adobe Acrobat](#) and [Engineering Instruction PM-19-001: Creating Seal, Signature and Date Stamps in Bluebeam Revu](#), which both describe the Department's plan signing and sealing procedures.
2. The originating section must submit a completed QC/QA Certification memorandum, included in this manual as [Appendix B](#), to the Endorser. The QC/QA Certification memorandum is intended to verify that the appropriate Standard of Care was followed by the originating section and that all QC/QA procedures outlined in this manual have been sufficiently followed. The Endorser may audit the project files to confirm compliance.

Appendix A Work Product Specific QC Procedures

This appendix provides specific QC procedures to be followed for the most common work products developed by the Department.

A.1 Plan Sheets

- The Originator will submit completed plan sheets to the QC Checker for quality control checking.
- The QC Checker will initial and date in **red** the first sheet of the provided set and review every piece of information conveyed on each plan sheet provided for checking. Checking activity is recorded directly on the plans using the color-coding scheme described in [Section 2.2](#) of this manual. All information contained in the plans such as elevations, dimensions, notes, schedules, quantities, etc., will be marked in **yellow** or **red** clearly indicating that a complete review of the document was performed. It is recommended that yellow highlight be flattened by the QC Checker in accordance with the procedure contained in [Section 2.2.1](#). When the check is conducted using Bluebeam Revu, the QC Checker's comments may be added to the disposition document by using the Markup List feature inside of Bluebeam Revu.
 - **Black pencil** may be used by the QC Checker to annotate their corrections. These annotations are not considered corrections, but may offer clarification to the Originator such as a scratch computation indicating how a corrected number recommended by the QC Checker was derived. When the check is conducted using Bluebeam Revu, the QC Checker's notes may be added to the disposition document by using the Markup List feature inside of Bluebeam Revu.
- The QC Checker will return markups to the Originator for disposition.
- The Originator will then verify the QC Checker's comments to the plans and discuss any items that may need further clarification. The Originator and the QC Checker are to work expeditiously to resolve any disagreements or confusion.
- The Originator will update the plan sheets and document the disposition of all comments using the color-coding scheme described in [Section 2.2](#) of this manual. The Originator is to use **green highlight** to indicate agreement and incorporation of the QC Checker's comments. **Green** text is used by the Originator to initial and date their response to the check as well as to document changes made based on the QC Checker's comments. **Blue** is used by the Originator to add responses to the QC Checker's comments for instances where the Originator disagrees with the QC Checker's provided markups. When the check is conducted using Bluebeam Revu, the Originator's responses to the QC Checker's comments may be added to the disposition document by using the Markup List feature inside of Bluebeam Revu.
- The Originator will present the QC Checker with the revised plan sheets and return the original markups with their dispositions. The QC Checker will initial and date in **red** the first sheet in the updated plan set and review all revisions using the color-coding scheme described in [Section 2.2](#) of this manual. All markups made are to be added to the updated plan set. The QC Checker will acknowledge agreement or make follow-up comments to dispositions in the previous iteration.
- This process will continue with as many iterations as necessary until the final iteration contains only the QC Checker's initials and date in **red** on the first sheet in the updated set and approval of all previous iteration's comments as signified by a **yellow** highlight. It is recommended that yellow highlight be flattened by the QC Checker in accordance with the procedure contained in [Section 2.2.1](#).
- Any comments that cannot be resolved between the Originator and the QC Checker will be resolved by the Engineer of Record. The dispositions will document how the dispute was resolved.

- A collated document of all QC iterations will be saved to the QC/QA folder in the project directory. A clear and consistent naming convention is to be used for simplified work tracking.

A.2 Calculations

- The Originator will provide completed computations to the QC Checker for QC with the following items included:
 - Objective of the computation,
 - List of design assumptions and technical references,
 - The Originator's initials and date completed,
 - Any documented self-checks produced by the Originator,
 - Index, summary, and page numbering as required for clarity, and
 - Sketches, dimensions, and units of measure.
- The QC Checker will initial and date in **red** the first sheet of the provided calculations. The QC Checker is to review and verify (at a minimum) the following:
 - Are the Originator's assumptions valid?
 - Have all necessary self-checks been made to accomplish the Originator's objective?
 - Side checks and/or parallel computations by the QC Checker may be required to validate the results from the software program and/or spreadsheets used in the design.
- At a minimum, all **assumptions**, **inputs**, and final **design checks** will either be **highlighted** or marked up in **red** text. It is recommended that yellow highlight be flattened by the QC Checker in accordance with the procedure contained in [Section 2.2.1](#). When the check is conducted using Bluebeam Revu, the QC Checker's comments may be added to the disposition document by using the Markup List feature inside of Bluebeam Revu.
 - **Black pencil** may be used by the QC Checker to annotate their corrections. These annotations are not considered corrections, but may offer clarification to the Originator such as a scratch computation indicating how a corrected number recommended by the QC Checker was derived. When the check is conducted using Bluebeam Revu, the QC Checker's notes may be added to the disposition document by using the Markup List feature inside of Bluebeam Revu.
- The QC Checker will return markups to the Originator for disposition.
- The Originator will then verify the QC Checker's comments to the calculations and discuss any items that may need further clarification. The Originator and the QC Checker are to work expeditiously to resolve any disagreements or confusion.
- The Originator will update the calculations and document the disposition of all comments using the color-coding scheme described in [Section 2.2](#) of this manual. The Originator is to use **green highlight** to indicate agreement and incorporation of the QC Checker's comments. **Green** text is used by the Originator to initial and date their response to the check as well as to document changes made based on the QC Checker's comments. **Blue** is used by the Originator to add responses to the QC Checker's comments for instances where the Originator disagrees with the QC Checker's provided markups. When the check is conducted using Bluebeam Revu, the Originator's responses to the QC Checker's comments may be added to the disposition document by using the Markup List feature inside of Bluebeam Revu.
- The Originator will present the QC Checker with the revised calculations and return the original markups with their dispositions. The QC Checker will initial and date in **red** the first sheet in the calculations provided and review all revisions using the color-coding scheme described in [Section 2.2](#) of this manual. All markups made are to be added to the revised calculations. The QC Checker

will acknowledge agreement or make follow-up comments to dispositions in the previous iteration.

- This process will continue with as many iterations as necessary until the final iteration contains only the QC Checker's initials and date in **red** on the first sheet in the calculations provided and approval of all previous iteration's comments as signified by a **yellow** highlight. It is recommended that yellow highlight be flattened by the QC Checker in accordance with the procedure contained in [Section 2.2.1](#).
- Any comments that cannot be resolved between the Originator and the QC Checker will be resolved by the Engineer of Record. The dispositions will document how the dispute was resolved.
- A collated document of all QC iterations will be saved to the QC/QA folder in the project directory. A clear and consistent naming convention is to be used for simplified work tracking.

A.3 Computer Software Computations

Only staff members familiar with the program or methodology should perform the role of the QC Checker when reviewing computer software computations.

- The Originator will provide the QC Checker with the following items:
 - All input data,
 - Any pertinent output data,
 - A list of any necessary design assumptions,
 - Results of any self-checks performed, and
 - Any other information as determined necessary by the Originator.
- The QC Checker's review will verify (at a minimum) the following items:
 - The input used by the Originator is appropriate,
 - The input used by the Originator is accurately applied, and
 - The validity of any of the Originator's assumptions.
- The QC Checker will review the Originator's self-check and/or perform side computations to verify that the Originator's output data is accurate.
- At a minimum, all **assumptions** and **inputs** will either be **highlighted** or marked up in **red** text. It is recommended that yellow highlight be flattened by the QC Checker in accordance with the procedure contained in [Section 2.2.1](#). When the check is conducted using Bluebeam Revu, the QC Checker's comments may be added to the disposition document by using the Markup List feature inside of Bluebeam Revu.
 - **Black pencil** may be used by the QC Checker to annotate their corrections. These annotations are not considered corrections, but may offer clarification to the Originator such as a scratch computation indicating how a corrected number recommended by the QC Checker was derived. When the check is conducted using Bluebeam Revu, the QC Checker's notes may be added to the disposition document by using the Markup List feature inside of Bluebeam Revu.
- The QC Checker will return markups to the Originator for disposition.
- The Originator will then verify the QC Checker's comments to the calculations and discuss any items that may need further clarification. The Originator and the QC Checker are to work expeditiously to resolve any disagreements or confusion.
- The Originator will update the calculations and document the disposition of all comments using the color-coding scheme described in [Section 2.2](#) of this manual. The Originator is to use **green highlight** to indicate agreement and incorporation of the QC Checker's comments. **Green** text is used by the Originator to initial and date their response to the check as well as to document changes made based on the QC Checker's comments. **Blue** is used by the Originator to add

responses to the QC Checker's comments for instances where the Originator disagrees with the QC Checker's provided markups. When the check is conducted using Bluebeam Revu, the Originator's responses to the QC Checker's comments may be added to the disposition document by using the Markup List feature inside of Bluebeam Revu.

- The Originator will present the QC Checker with the revised calculations and return the original markups with their dispositions. The QC Checker will initial and date in **red** the first sheet in the calculations provided and review all revisions using the color-coding scheme described in [Section 2.2](#) of this manual. All markups made are to be added to the revised calculations. The QC Checker will acknowledge agreement or make follow-up comments to dispositions in the previous iteration.
- This process will continue with as many iterations as necessary until the final iteration contains only the QC Checker's initials and date in **red** on the first sheet in the calculations provided and approval of all previous iteration's comments as signified by a **yellow** highlight. It is recommended that yellow highlight be flattened by the QC Checker in accordance with the procedure contained in [Section 2.2.1](#).
- Any comments that cannot be resolved between the Originator and the QC Checker will be resolved by the Engineer of Record. The dispositions will document how the dispute was resolved.
- A collated document of all QC iterations will be saved to the QC/QA folder in the project directory. A clear and consistent naming convention is to be used for simplified work tracking.

A.4 3D Engineered Models

Creating 3D Engineered Models has become an essential part of the project development process. The Department maintains recommended QC/QA procedures for these work products at the following location:

https://caddwiki.deldot.gov/index.php/Development_and_Review_of_3D_Engineered_Models_for_Construction. The Department's established procedures can be used at logical milestones within the project development process as determined necessary by the project team.

A.5 Word Documents

QC of Word documents will be accomplished via the "track changes" function and saved to the appropriate folder in the project directory. However, if preferred there are two alternatives to using the "track changes" method.

1. **Hard Copy Review** – A hard copy review may be performed using the Quality Control Color-Coding scheme outlined in [Section 2.2](#) of this manual. In this case, it is not necessary to highlight every word of text in the document but rather just make a notation at the bottom of each page for which the review has been completed.
2. **PDF Document Review** – The word document can be converted to a PDF and a review can be performed using Bluebeam Revu. The QC will follow the previously provided Plan Sheet procedures if this method is chosen. In this case, it is not necessary to highlight every word of text in the document but rather just make a notation at the bottom of each page for which the review has been completed.

Appendix B QC/QA Memorandums

QC/QA Standard Certification Memo Template – Department Developed Contract

MEMORANDUM

To: Division Director
Via: Chief, Assistant Director, or District Engineer as QC/QA Verifier
Via: PM II as QC/QA Certifier
From: PM I as QC/QA Certifier
Date: Month, Day, Year
Subject: TXXXX-XXX-XX, Project Name

QC/QA Certification:

I certify to the best of my knowledge and belief that all elements required for advertisement are complete, accurate, and meet the Standard of Care required. DeIDOT's quality control processes were followed and a record of quality control checks are available in project files.

Signature (PM I)

Date

Signature (PM II)

Date

QC/QA Verification:

I have reviewed the documents and verify to the best of my knowledge and belief that the quality control and quality assurance process was followed; that the Engineer of Record is properly licensed; and that the project design, construction plans, specifications, cost estimates, and all other required elements needed to construct this project are complete and ready for advertisement.

Signature (AD, Chief, District Engineer)

Date

M E M O R A N D U M

To: Division Director
Via: Chief, Assistant Director, or District Engineer as QC/QA Verifier
Via: PM II as QC/QA Verifier
From: PM I as QC/QA Verifier
Date: Month, Day, Year
Subject: TXXXX-XXX-XX, Project Name

Consultant Certification:

I certify to the best of my knowledge and belief that all required elements needed to construct this project are complete and have followed our organization’s quality control and quality assurance policy.

Signature (Consultant)

Date

QC/QA Verification:

This project was designed under the responsible charge of a consultant engineer. I have reviewed the documents and verify to the best of my knowledge and belief that the required quality control processes were followed in accordance with the consultant’s quality control and quality assurance policy; that the Engineer of Record is properly licensed; and that the project design, construction plans, specifications, cost estimates, and all other required elements needed to construct this project are complete and ready for advertisement.

Signature (PM I)

Date

Signature (PM II)

Date

Signature (AD, Chief, District Engineer)

Date

M E M O R A N D U M

To: Group Engineer, ROW Engineering
Via: Chief, Assistant Director, or District Engineer as QC/QA Verifier
Via: PM II as QC/QA Certifier
From: PM I as QC/QA Certifier
Date: Month, Day, Year
Subject: TXXXX-XXX-XX, Project Name

QC/QA Certification:

I certify to the best of my knowledge and belief that the required design elements are complete, meet the Standard of Care required as to process, and are within the existing or proposed rights-of-way.

Signature (PM I)

Date

Signature (PM II)

Date

QC/QA Verification:

I have reviewed the documents and verify to the best of my knowledge and belief that all required elements for acquisition are complete, meet the Standard of Care required as to process, and are within the existing or proposed rights-of-way.

Signature (AD, Chief, District Engineer)

Date

M E M O R A N D U M

To: Group Engineer, ROW Engineering
Via: Chief, Assistant Director, or District Engineer as QC/QA Verifier
Via: PM II as QC/QA Verifier
From: PM I as QC/QA Verifier
Date: Month, Day, Year
Subject: TXXXX-XXX-XX, Project Name

Consultant Certification:

I certify to the best of my knowledge and belief that the required design elements are complete, meet the Standard of Care required as to process, have followed our organization’s quality control and quality assurance policy, and are within the existing or proposed rights-of-way.

Signature (Consultant)

Date

QC/QA Verification:

This project was designed under the responsible charge of a consultant engineer. I have reviewed the documents and verify to the best of my knowledge and belief that all required quality control processes were followed in accordance with the consultant’s quality control and quality assurance policy and that all required elements needed to acquire the necessary rights-of-way are complete.

Signature (PM I)

Date

Signature (PM II)

Date

Signature (AD, Chief, District Engineer)

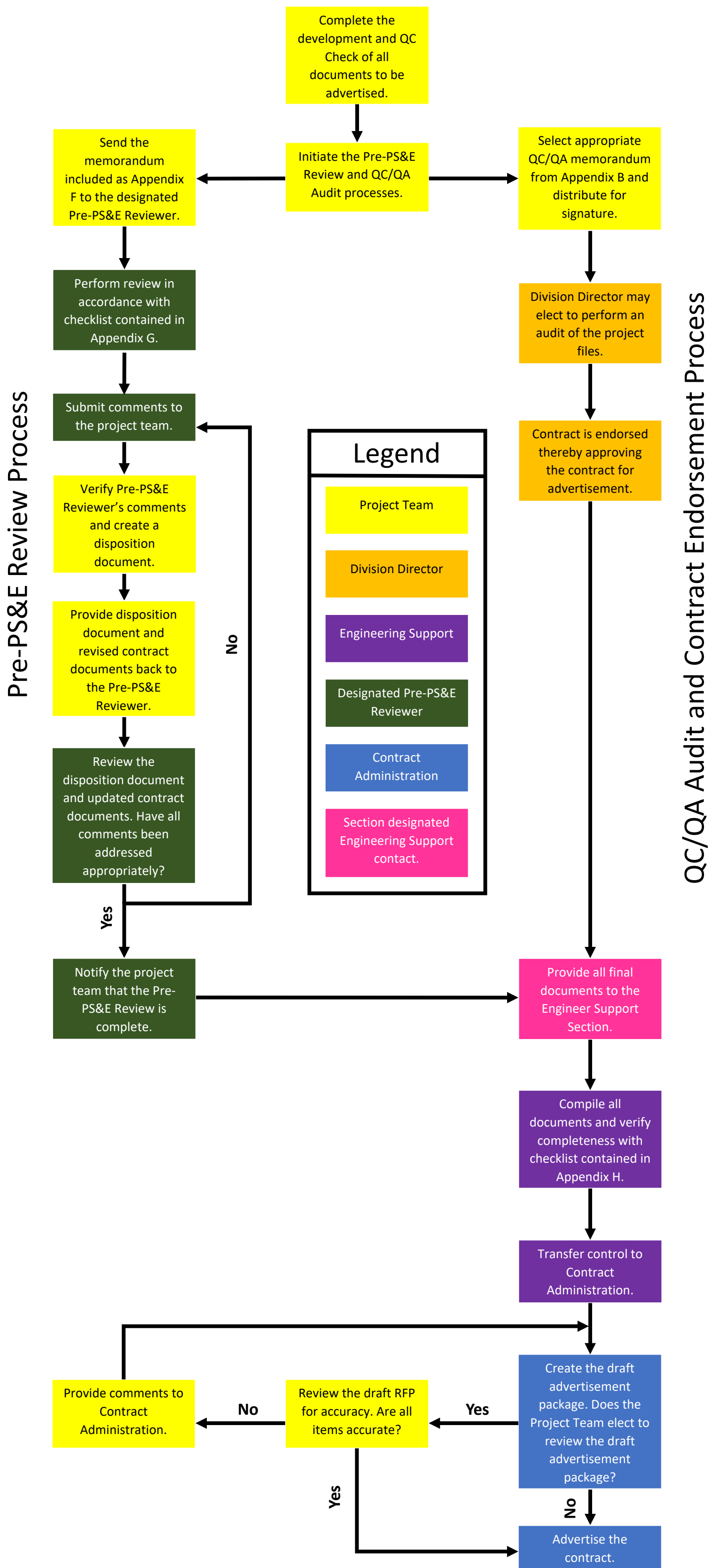
Date

Appendix C Department Checklists

The Department has developed and maintains several project development related checklists that are intended to ensure complete work products. The Department's checklists are dynamic documents and are updated as Department processes and preferences change. The table provided below lists and provides a link to the Department's project development related checklists.

Document Title	Link
Construction Plan Submission Checklist for Division of Transportation Solutions Projects	https://deldot.gov/Business/drc/pdfs/projectmanagement/plan_submission_checklist.pdf?cache=1637199339571
Bridge Design – Concrete Girder Bridge Submission Checklist	https://deldot.gov/Business/drc/pd_files/plan_development/concrete_girder_bridge_checklist.pdf
Bridge Design – Steel Girder Bridge Submission Checklist	https://deldot.gov/Business/drc/pd_files/plan_development/steel_girder_bridge_checklist.pdf
Bridge Design – Precast Concrete Arch or Rigid Frame Bridge Submission Checklist	https://deldot.gov/Business/drc/pd_files/plan_development/bridge_arch_or_frame_checklist.pdf
Bridge Design – Precast Concrete Box Culvert Submission Checklist	https://deldot.gov/Business/drc/pd_files/plan_development/bridge_culvert_checklist.pdf
Right-of-Way Plan Submission Checklist for Division of Transportation Solutions Projects	https://deldot.gov/Business/drc/pdfs/rightofway/rw_plan_submission_checklist.pdf
3D Engineered Model Review Checklist	https://deldot.gov/Business/drc/pdfs/cadd/guidelines/development_and_review_of_3d_engineered_models_for_construction.pdf
Drainage Plan Submission Checklist for Division of Transportation Solutions Projects	https://deldot.gov/Business/drc/misc_files/drainage_checklist.pdf
Stormwater Checklist for Division of Transportation Solutions Projects	https://deldot.gov/Business/drc/pdfs/stormwater/guidelines/stormwater_checklist.pdf

Appendix E PS&E Submission to Advertisement Process



Delaware Department of Transportation
Pre-PS&E Review Request Memorandum

Appendix F Pre-PS&E Review Initiation Memorandum

Directions for Completing this Memorandum

- This memorandum is to be completed by the DelDOT Project Manager to request a Pre-PS&E Review from the designated Pre-PS&E Reviewer.
- The Pre-PS&E review is only to occur after all contract documents have been sufficiently quality control checked and quality assurance reviewed in accordance with the process outlined in the DelDOT QC/QA Manual.
- The DelDOT Project Manager is to email this completed memorandum to the designated Pre-PS&E reviewer to initiate the Pre-PS&E review.
- The checklist included on the next page is intended as a tool to assist the DelDOT Project Manager in gauging whether the contract documents are ready for a Pre-PS&E review. Answering “No” to any of the checklist prompts requires that an explanation be provided in the “Additional Comments” field at the bottom of this page.
- By emailing this memorandum, the DelDOT Project Manager certifies that the contract documents are ready for review.
- At a minimum, the following documents must be provided through the hyperlink provided below:
 - Draft bid proposal document,
 - All contract specific language to be added to the contract documents,
 - Construction Plans,
 - Completed quantity calculations in accordance with the Department’s [Quantity Calculations Guidelines](#),
 - Traffic Statement,
 - Timing Statement, and
 - AASHTOWare quantities output summary.

Project Information	
Contract Number:	
F.A.P. Number:	
Primavera Number:	
Contract Name:	
Designer/ Engineer of Record:	
DelDOT Project Manager:	
Bridge Number (if applicable):	
FHWA PoDI Project?:	
Link to Review Documents:	

Additional Pre-PS&E Requestor Notes

Delaware Department of Transportation
Pre-PS&E Review Request Memorandum

Bid Proposal Document Progress Checklist		
Have the following items been completed?	Yes	No
Have all work products associated with the Construction Plans been QC checked and QA reviewed in accordance with the requirements in the DelDOT QC/QA Manual?	<input type="checkbox"/>	<input type="checkbox"/>
Have all comments received on the Construction Plans been addressed and documented?	<input type="checkbox"/>	<input type="checkbox"/>
Has the Title Sheet been stamped and signed by the Engineer of Record?	<input type="checkbox"/>	<input type="checkbox"/>
Is the project's QC/QA Memorandum in the process of being circulated for signature?	<input type="checkbox"/>	<input type="checkbox"/>
Have all work products associated with the Engineer's Estimate been QC checked and QA reviewed in accordance with the requirements in the DelDOT QC/QA Manual?	<input type="checkbox"/>	<input type="checkbox"/>
Have all comments received on the Engineer's Estimate been addressed and documented?	<input type="checkbox"/>	<input type="checkbox"/>
Have all necessary quantity calculations and estimate information been incorporated into a single document in accordance with the Department's Quantity Calculations Guidelines ?	<input type="checkbox"/>	<input type="checkbox"/>
Has the Traffic Statement been received and reviewed for accuracy and consistency with the other contract documents?	<input type="checkbox"/>	<input type="checkbox"/>
Has the Utility Statement been received and reviewed for accuracy and consistency with the other contract documents?	<input type="checkbox"/>	<input type="checkbox"/>
Has the Timing Statement been received and reviewed for accuracy and consistency with the other contract documents?	<input type="checkbox"/>	<input type="checkbox"/>
Has the Railroad Statement been received and reviewed for accuracy and consistency with the other contract documents?	<input type="checkbox"/>	<input type="checkbox"/>
Has the Environmental Statement been received and reviewed for accuracy and consistency with the other contract documents? If no, provide estimated date of STIP or Certified Cleared Cert. in the additional comments field.	<input type="checkbox"/>	<input type="checkbox"/>
Has the Right-of-Way Statement been received and reviewed for accuracy and consistency with the other contract documents? If no, provide estimated date of STIP or Certified Cleared Cert. in the additional comments field.	<input type="checkbox"/>	<input type="checkbox"/>
Has all project required information been entered into AASHTOWare?	<input type="checkbox"/>	<input type="checkbox"/>
Have all required quantity breakout sheets been completed? Only answer if applicable.	<input type="checkbox"/>	<input type="checkbox"/>
Has all required contract specific language been created and ready for insertion into the contract?	<input type="checkbox"/>	<input type="checkbox"/>
For federally funded projects only – Has the project team submitted an inquiry to the DelDOT DBE Manager to determine whether item 763503 – Trainee needs to be included in the contract? Only answer if applicable.	<input type="checkbox"/>	<input type="checkbox"/>
Has a draft bid proposal document been processed and reviewed by the Engineer of Record?	<input type="checkbox"/>	<input type="checkbox"/>
Have the appropriate activities and expenses been updated and statements attached in Primavera?	<input type="checkbox"/>	<input type="checkbox"/>
If required, has the advanced utility relocation memo been approved and submitted? Only answer if applicable.	<input type="checkbox"/>	<input type="checkbox"/>
Have the project's Digital Deliverables been provided to the designate reviewer?	<input type="checkbox"/>	<input type="checkbox"/>

Pre-PS&E Review Checklist

Appendix G Pre-PS&E Review Checklist

Directions for Completing this Checklist

- Pre-PS&E reviews are intended to be an independent final review of the contract documents ahead of advertisement.
- Pre-PS&E reviews should be performed by a staff member familiar with all aspects of design and contract administration. Originating sections typically assign the pre-PS&E review responsibility to that section’s Design Resource Engineer (DRE) due to their relevant experience and expertise. Sections which do not have a Design Resource Engineer can assign this task to other qualified staff members.
- The pre-PS&E review should focus on the accuracy, consistency, and completeness of the contract documents. Subjective or preference related comments are to be kept to a minimum.
- The pre-PS&E review is to be requested by the project team once all contract documents have been sufficiently quality control checked and quality assurance reviewed in accordance with the process outlined in the DeIDOT QC/QA Manual.
- This checklist can be used by the pre-PS&E reviewer to help ensure a comprehensive review of the contract documents. Checklist prompts which result in a “No” response represent an inconsistency with the contract documents which requires resolution. The review is to result in the reviewer returning pdf markups of the draft contract documents.
- The pre-PS&E reviewer is to coordinate with the project team to verify that all comments are properly addressed prior to PS&E.
- For brevity, this checklist refers to several of the draft contract documents through acronyms. Below is a list of the acronyms included in this checklist:
 - **BPD** – Bid Proposal Document,
 - **AED** – AASHTOware Estimate Document,
 - **CPS** – Construction Plan Set,
 - **EE** – Engineer’s Estimate, and
 - **QC** – Quantity Calculations.

Project Information	
Contract Number:	
Contract Name:	
Bridge Number (if applicable):	
Name of Reviewer:	
Name of Review Requestor:	

Delaware Department of Transportation
Pre-PS&E Review Checklist

Section I - Bid Proposal Document (BPD) Review			
Answering "No" represents a contract document inconsistency which requires resolution.	Yes	No	NA
This section of the review consists of reviewing the contract items in the BPD and the AED to ensure consistency between the two documents.			
Are the contract item numbers consistent between the BPD and AED ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the contract item units of measure consistent between the BPD and AED ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the contract item quantities consistent between the BPD and AED ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This section of the review consists of reviewing the BPD to ensure breakout sheets are included where required.			
Are breakout sheets included for all items which require breakout sheets?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are breakout sheets included for all elements where breakout sheets are referenced in the CPS ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This section of the review consists of reviewing the BPD and the AED to verify that all required special provisions were included in the BPD .			
Are special provisions included in the BPD for all items in the BPD and AED that require the insertion of a special provision?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the language contained in the contract special provisions consistent with the rest of the contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the required non-pay item special provisions included in the contract? (Typically 202560, 401502, 401580, 401699, 763503 etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are any railroad statement required special provisions included?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This section of the review consists of reviewing any contract specific language in the BPD to the other contract documents.			
Are any contract specific road user costs (RUCs) and liquidated damages (LDs) referenced in the CPS or other contract documents included in the BPD ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is any contract specific entity coordination (i.e. utilities, government agencies, property owners etc.) which is required by the contract included in the BPD ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are any contract specific insurance requirements referenced in the CPS or other contract documents included in the BPD ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This section of the review consists of a review of the Timing Statement in comparison to the BPD .			
Is the amount of contract calendar days and weather days consistent between the BPD and the Timing Statement?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the BPD reflect any special language regarding timing such as partial/ full NTP dates?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Delaware Department of Transportation
Pre-PS&E Review Checklist

Section II - Construction Plan Set (CPS Review)			
Answering "No" represents a contract document inconsistency which requires resolution.	Yes	No	NA
This section of the review consists of a general review of the CPS to ensure clarity and accuracy.			
Are the CPS free of spelling and grammatical errors?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do the CPS meet the Department's CADD standards?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the CPS readable?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This section of the review consists of a review of the Notes sheet(s) of the CPS.			
Does the Notes sheet(s) contain only relevant project notes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the included project notes free of conflict and inconsistencies with the information in the contract specifications (Standard Specifications and contract special provisions)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all items included in the Notes sheet(s) included in the AED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the General Notes included the most recent?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the Specification year and Standard Detail year referenced in the General Notes consistent with the rest of the contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do the included project notes follow the approved project notes language on the DRC?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all items and quantities included in the Earthwork Summary included and consistent with the AED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This section of the review consists of a review of the Typical Section sheet(s) of the CPS.			
Are all items included in the Typical Section sheet(s) included in the AED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are only items that are used in the Typical Sections shown in the Typical Section sheet(s) legend?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the item usage in the Typical Section sheet(s) consistent and devoid of conflicts with the information in the Notes sheet(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the item usage in the Typical Section sheet(s) consistent and devoid of conflict with the information in the Construction Plan sheet(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the item usage in the Typical Section sheet(s) consistent and devoid of conflict with the contract specifications (Standard Specifications and contract special provisions)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This section of the review consists of a review of the Construction Plan sheet(s) of the CPS.			
Are all items included in any Construction Plan sheet(s) notes included in the AED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all elements of proposed work included in the Construction Plan sheet(s) accounted for in the QC? For example, are all drainage inlets identified as "Adjust by Contractor" accounted for in the QC?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the schedule information provided in the Construction Plan sheet(s) match the quantity in the AED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the item usage in the Construction Plan sheet(s) consistent and devoid of conflict with the information in the Notes sheet(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the item usage in the Construction Plan sheet(s) consistent and devoid of conflict with the contract specifications (Standard Specifications and contract special provisions)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all Construction Plan sheet(s) notes free of conflict and inconsistencies with the information in the contract specifications (Standard Specifications and contract special provisions)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all Construction Plan sheet(s) notes consistent with the rest of the CPS?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This section of the review consists of a review of the Profile sheet(s) of the CPS.			
Are proposed drainage features shown on the Profile sheet(s) consistent with the Construction Plan sheet(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all items included in the Profile sheet(s) included in the AED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This section of the review consists of a review of the Grades and Geometrics sheet(s) of the CPS.			
Are all items included in the Grades and Geometrics sheet(s) included in the AED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This section of the review consists of a review of the Construction Detail sheet(s) of the CPS.			
Are all items included in the Construction Detail sheet(s) included in the AED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the detail information in the Construction Detail sheet(s) consistent and devoid of conflict with the other CPS sheets?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all Construction Detail sheet(s) notes free of conflict and inconsistencies with the information in the contract specifications (Standard Specifications and contract special provisions)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all Construction Detail sheet(s) notes consistent with the rest of the CPS?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Delaware Department of Transportation
Pre-PS&E Review Checklist

Section II - Construction Plan Set (CPS Review)			
Answering "No" represents a contract document inconsistency which requires resolution.	Yes	No	NA
This section of the review consists of a review of the Bridge Plan sheet(s) of the CPS.			
Do the Bridge Plan sheet(s) contain only relevant project notes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are elevation views and structural details properly shown and detailed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all items included in the Bridge sheets included in the AED ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This section of the review consists of a review of the Stormwater Management Plan sheet(s) of the CPS.			
Is the SWM Engineer's signature included in the signature block?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all items included in the Stormwater Management Plan sheet(s) included in the AED ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are only relevant notes included?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all Stormwater Management Plan sheet(s) notes free of conflict and inconsistencies with the information in the contract specifications (Standard Specifications and contract special provisions)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all Stormwater Management Plan sheet(s) notes consistent with the rest of the CPS ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This section of the review consists of a review of the Environmental Compliance Plan sheet(s) of the CPS.			
Are all items included in the Environmental Compliance Plan sheet(s) included in the AED ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the Environmental Compliance Plan sheet(s) notes logical and enforceable?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all Environmental Compliance Plan sheet(s) notes free of conflict and inconsistencies with the information in the contract specifications (Standard Specifications and contract special provisions)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all Environmental Compliance Plan sheet(s) notes consistent with the rest of the CPS ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This section of the review consists of a review of the Construction Phasing, M.O.T. and Erosion Control Plan sheet(s) of the CPS.			
Is the proposed work constructable?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the SWM Engineer's signature included in the signature block?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are only relevant notes included?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the correct level of Erosion and Sediment Control Supervisor oversight checkbox selected?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all Construction Phasing, M.O.T. and Erosion Control Plan sheet(s) notes free of conflict and inconsistencies with the information in the contract specifications (Standard Specifications and contract special provisions)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all Construction Phasing, M.O.T. and Erosion Control Plan sheet(s) notes consistent with the rest of the CPS ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the schedule information provided in the Construction Phasing, M.O.T. and Erosion Control Plan sheet(s) match the quantity in the AED ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all items included in the Construction Phasing, M.O.T. and Erosion Control Plan sheet(s) included in the AED ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the quantities of items that are time duration dependent generally in-line with the Timing Statement?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the item usage in the Construction Phasing, M.O.T. and Erosion Control Plan sheet(s) consistent and devoid of conflict with the contract specifications (Standard Specifications or contract special provisions)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This section of the review consists of a review of the Detour Plan sheet(s) of the CPS.			
Is the detour route(s) specified logical?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the Detour Plan sheet(s) signed by all necessary parties?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all contractor items included in the Detour Plan sheet(s) included in the AED ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This section of the review consists of a review of the Landscaping Plan sheet(s) of the CPS.			
Does any schedule information provided in the Landscaping Plan sheet(s) match the quantity in the AED ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does any schedule information provided in the Landscaping Plan sheet(s) match the quantities in any included breakout sheets?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all items included in the Landscaping Plan sheet(s) included in the AED ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all Landscaping Plan sheet(s) notes free of conflict and inconsistencies with the information in the contract specifications (Standard Specifications and contract special provisions)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all Landscaping Plan sheet(s) notes consistent with the rest of the CPS ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Delaware Department of Transportation
Pre-PS&E Review Checklist

Section II - Construction Plan Set (CPS Review)			
Answering "No" represents a contract document inconsistency which requires resolution.	Yes	No	NA
This section of the review consists of a review of the Lighting Plan sheet(s) of the CPS.			
Does any schedule information provided in the Lighting Plan sheet(s) match the quantity in the AED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the existing system disposition included in the Lighting Plan sheet(s) match that in the Construction Plan sheet(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all items included in the Lighting Plan sheet(s) included in the AED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all Lighting Plan sheet(s) notes free of conflict and inconsistencies with the information in the contract specifications (Standard Specifications and contract special provisions)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all Lighting Plan sheet(s) notes consistent with the rest of the CPS?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This section of the review consists of a review of the Utility Relocation Plan sheet(s) of the CPS.			
Are all items included in the Utility Relocation Plan sheet(s) included in the AED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the information in the Utility Relocation Plan sheet(s) and the Construction Plan sheet(s) consistent and devoid of conflict?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the information in the Utility Relocation Plan sheet(s) and the construction phasing shown in the Construction Phasing, M.O.T. and Erosion Control Plan sheet(s) consistent and devoid of conflict?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all Utility Relocation Plan sheet(s) notes free of conflict and inconsistencies with the information in the contract specifications (Standard Specifications and contract special provisions)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all Utility Relocation Plan sheet(s) notes consistent with the rest of the CPS?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This section of the review consists of a review of the Signing, Striping and Conduit Plan sheet(s) of the CPS.			
Are all items included in the Signing, Striping and Conduit Plan sheet(s) included in the AED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do the quantities included in the Signing, Striping and Conduit Plan sheet(s) sign schedule match the AED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the schedule information provided in the Signing, Striping and Conduit Plan sheet(s) match the quantity in the AED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all Signing, Striping and Conduit Plan sheet(s) notes free of conflict and inconsistencies with the information in the contract specifications (Standard Specifications and contract special provisions)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all Signing, Striping and Conduit Plan sheet(s) notes consistent with the rest of the CPS?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This section of the review consists of a review of the Sign Structure sheet(s) of the CPS.			
Are all items included in the Sign Structure sheet(s) included in the AED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all Sign Structure sheet(s) notes free of conflict and inconsistencies with the information in the contract specifications (Standard Specifications and contract special provisions)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all Sign Structure sheet(s) notes consistent with the rest of the CPS?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This section of the review consists of a review of the Signalization Plan sheet(s) of the CPS.			
Are all items included in the Signalization Plan sheet(s) included in the AED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the existing system disposition included in the Signalization Plan sheet(s) match that in the Construction Plan sheet(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all Signalization Plan sheet(s) notes free of conflict and inconsistencies with the information in the contract specifications (Standard Specifications and contract special provisions)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all Signalization Plan sheet(s) notes consistent with the rest of the CPS?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This section of the review consists of a review of the Utility Statement in comparison to the CPS.			
Is the Utility Statement consistent with the Legend sheet?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the Utility Statement consistent with the Utility Relocation Plan sheet(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the Utility Statement consistent with the Construction Plan sheet(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the Utility Statement consistent with the Lighting Plan sheet(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the Utility Statement consistent with the Signalization Plan sheet(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are contractor designated adjustments specified in the Utility Statement consistent with the AED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Delaware Department of Transportation
Pre-PS&E Review Checklist

Section II - Construction Plan Set (CPS Review)			
Answering "No" represents a contract document inconsistency which requires resolution.	Yes	No	NA
This section of the review consists of a review of the Traffic Statement in comparison to the CPS.			
Are the contractor items referenced in the Traffic Statement included in the AED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the sign schedule included in the Signing, Striping and Conduit Plan sheet(s) match the sign schedule included in the Traffic Statement?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the Traffic Statement consistent with the Lighting Plan sheet(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the Traffic Statement consistent with the Signing, Striping and Conduit Plan sheet(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the Traffic Statement consistent with the Sign Structures sheet(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the Traffic Statement consistent with the Signalization Plan sheet(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This section of the review consists of a review of the Environmental Statement in comparison to the CPS.			
Do the Environmental Compliance Plan sheet(s) notes and Environmental Statement match?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

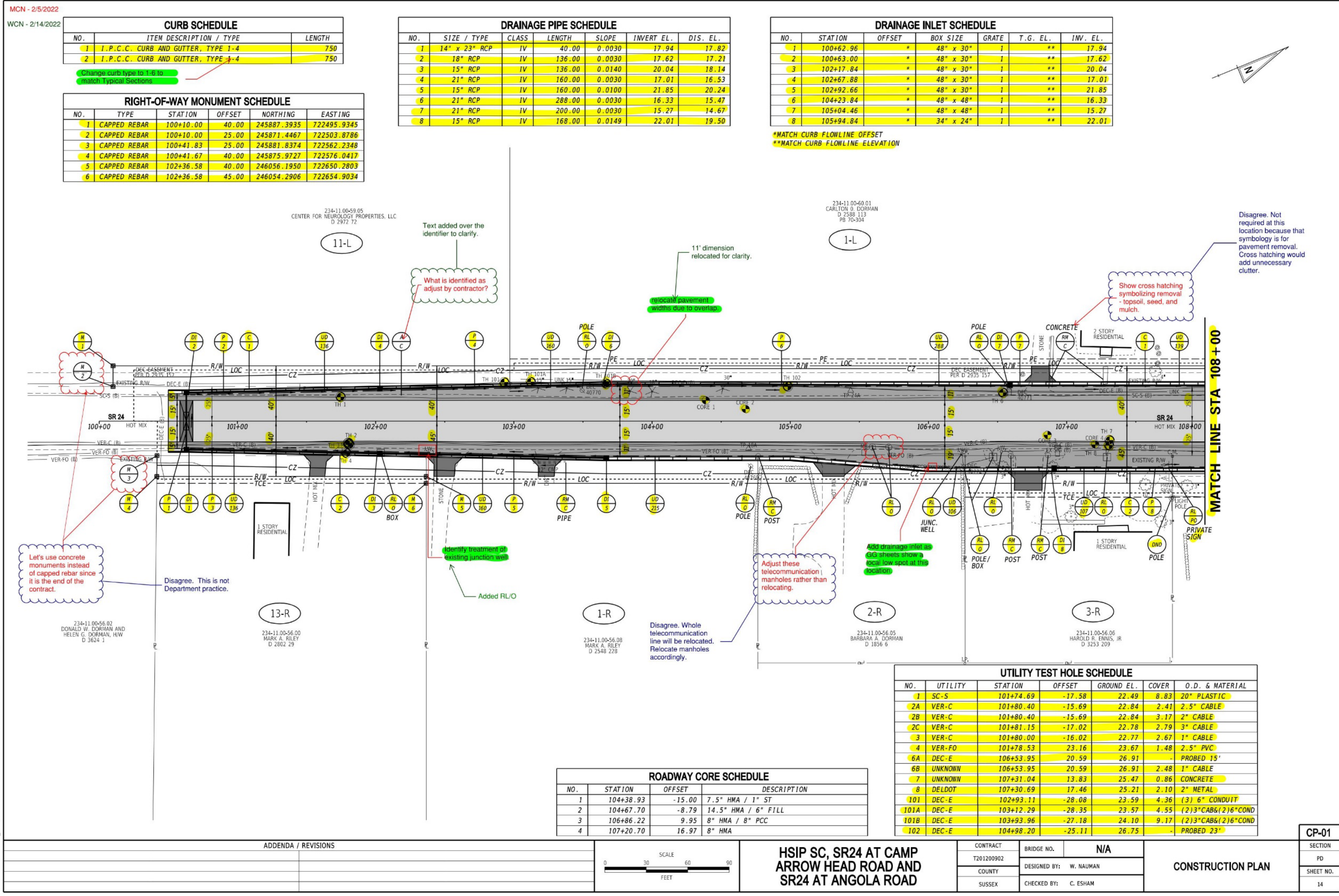
Section III – Engineer’s Estimate (EE) Review			
Answering "No" represents a contract document inconsistency which requires resolution.	Yes	No	NA
This section of the review consists of reviewing the EE to the other contract documents to ensure consistency.			
Are the quantity calculations included in QC complete and able to be followed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all items included in the QC included in the AED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do the quantities included in the QC match the quantities included in the AED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do the units of measure included in the QC match the units of measure included in the AED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the information in the QC (items, units of measure, and measured quantities) consistent with the contract specifications (Standard Specifications and contract special provisions)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the estimate information in Primavera match the EE?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PLANS, SPECIFICATIONS, AND ESTIMATE CHECKLIST

<u>CONTRACT #:</u>		NOTES: <div style="background-color: #e0e0e0; height: 150px; width: 100%;"></div>
<u>CONTRACT NAME:</u>		
<u>PROJECT MANAGER:</u>		
<u>AASHTO COST ESTIMATE:</u>	\$	
<u>P6 COST ESTIMATE:</u>	\$	
<u>ESTIMATES MATCH:</u>	<input type="checkbox"/>	

<u>COMPLETE</u>	<u>DATE</u>	<u>ACTIVITY</u>	<u>NOTES</u>
<input type="checkbox"/>		TRAFFIC STATEMENT (MPD08)	
<input type="checkbox"/>		UTILITY STATEMENT (MPD09)	
<input type="checkbox"/>		RIGHT-OF-WAY STATEMENT (MPD15)	
<input type="checkbox"/>		ENVIRONMENTAL STATEMENT (MPD16)	
<input type="checkbox"/>		RAILROAD STATEMENT (MPD19)	
<input type="checkbox"/>		TIMING STATEMENT (MPD17)	CD: ??? WD: ?? NTP: ????????????
<input type="checkbox"/>		FINAL SIGNED PLANS (MPD13)	
<input type="checkbox"/>		STORMWATER SIGN-OFF (MPD20)	
<input type="checkbox"/>		PS&E SUBMITTED (MPD14)	Date PM Reviews & Approves
<input type="checkbox"/>		FINAL SPECIFICATIONS (MPD18)	Date I Finished Proposal
<input type="checkbox"/>		SPECIAL LANGUAGE UPDATED	
<input type="checkbox"/>		TRANSFERRED TO CONTRACT ADMIN.	Date I PS&E to Contract Admin.

Appendix I Example Disposition Document



MCN - 2/5/2022
WCN - 2/14/2022

CURB SCHEDULE		
NO.	ITEM DESCRIPTION / TYPE	LENGTH
1	I.P.C.C. CURB AND GUTTER, TYPE 1-4	750
2	I.P.C.C. CURB AND GUTTER, TYPE 3-4	750

Change curb type to 1-6 to match Typical Sections

RIGHT-OF-WAY MONUMENT SCHEDULE					
NO.	TYPE	STATION	OFFSET	NORTHING	EASTING
1	CAPPED REBAR	100+10.00	40.00	245887.3935	722495.9345
2	CAPPED REBAR	100+10.00	25.00	245871.4467	722503.8786
3	CAPPED REBAR	100+41.83	25.00	245881.8374	722562.2348
4	CAPPED REBAR	100+41.67	40.00	245875.9727	722576.0417
5	CAPPED REBAR	102+36.58	40.00	246056.1950	722650.2803
6	CAPPED REBAR	102+36.58	45.00	246054.2906	722654.9034

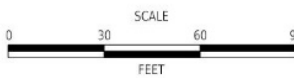
DRAINAGE PIPE SCHEDULE							
NO.	SIZE / TYPE	CLASS	LENGTH	SLOPE	INVERT EL.	DIS. EL.	
1	14" x 23" RCP	IV	40.00	0.0030	17.94	17.82	
2	18" RCP	IV	136.00	0.0030	17.62	17.21	
3	15" RCP	IV	136.00	0.0140	20.04	18.14	
4	21" RCP	IV	160.00	0.0030	17.01	16.53	
5	15" RCP	IV	160.00	0.0100	21.85	20.24	
6	21" RCP	IV	288.00	0.0030	16.33	15.47	
7	21" RCP	IV	200.00	0.0030	15.27	14.67	
8	15" RCP	IV	168.00	0.0149	22.01	19.50	

DRAINAGE INLET SCHEDULE							
NO.	STATION	OFFSET	BOX SIZE	GRATE	T.G. EL.	INV. EL.	
1	100+62.96	*	48" x 30"	1	**	17.94	
2	100+63.00	*	48" x 30"	1	**	17.62	
3	102+17.84	*	48" x 30"	1	**	20.04	
4	102+67.88	*	48" x 30"	1	**	17.01	
5	102+92.66	*	48" x 30"	1	**	21.85	
6	104+23.84	*	48" x 48"	1	**	16.33	
7	105+04.46	*	48" x 48"	1	**	15.27	
8	105+94.84	*	34" x 24"	1	**	22.01	

*MATCH CURB FLOWLINE OFFSET
**MATCH CURB FLOWLINE ELEVATION

ROADWAY CORE SCHEDULE				
NO.	STATION	OFFSET	DESCRIPTION	
1	104+38.93	-15.00	7.5" HMA / 1" ST	
2	104+67.70	-8.79	14.5" HMA / 6" FILL	
3	106+86.22	9.95	8" HMA / 8" PCC	
4	107+20.70	16.97	8" HMA	

UTILITY TEST HOLE SCHEDULE							
NO.	UTILITY	STATION	OFFSET	GROUND EL.	COVER	O.D. & MATERIAL	
1	SC-S	101+74.69	-17.58	22.49	8.83	20" PLASTIC	
2A	VER-C	101+80.40	-15.69	22.84	2.41	2.5" CABLE	
2B	VER-C	101+80.40	-15.69	22.84	3.17	2" CABLE	
2C	VER-C	101+81.15	-17.02	22.78	2.79	3" CABLE	
3	VER-C	101+80.00	-16.02	22.77	2.67	1" CABLE	
4	VER-FO	101+78.53	23.16	23.67	1.48	2.5" PVC	
6A	DEC-E	106+53.95	20.59	26.91	-	PROBED 15'	
6B	UNKNOWN	106+53.95	20.59	26.91	2.48	1" CABLE	
7	UNKNOWN	107+31.04	13.83	25.47	0.86	CONCRETE	
8	DELDOT	107+30.69	17.46	25.21	2.10	2" METAL	
101	DEC-E	102+93.11	-28.08	23.59	4.36	(3) 6" CONDUIT	
101A	DEC-E	103+12.29	-28.35	23.57	4.55	(2)3"CAB&(2)6"COND	
101B	DEC-E	103+93.96	-27.18	24.10	9.17	(2)3"CAB&(2)6"COND	
102	DEC-E	104+98.20	-25.11	26.75	-	PROBED 23'	



HSIP SC, SR24 AT CAMP ARROW HEAD ROAD AND SR24 AT ANGOLA ROAD

CONTRACT	BRIDGE NO.	N/A
T20120902	DESIGNED BY:	W. NAUMAN
COUNTY	CHECKED BY:	C. ESHAM
SUSSEX		

CONSTRUCTION PLAN

CP-01	SECTION
	PD
	SHEET NO.
	14

MCN - 2/5/2022
WCN - 2/14/2022

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**MATCH CURB FLOWLINE ELEVATION

