QUALITY MANAGEMENT PLAN

1. Management

1.1. Quality Policy

The BTR project quality policy is based on the fundamental concept that the control of
quality is a team obligation that recognizes that quality is built into every aspect of the project, even it is under a DBFOM contract. The concessionaire is expected to provide quality products and services that meet or exceed the project requirements, delivered safely, on time, and within budget. Quality work will be the responsibility of every individual performing the work. Quality will be obtained through appropriate planning and control of work operations and by specific quality control activities such as reviewing, checking, inspecting, testing, and quality surveillance/audit.

1.2. Project Quality Organization

The Project Quality Organization (QO), is comprised of two separate groups; Quality Control (QC) and Quality Assurance (QA).

- QC, under the direction of the Project Manager includes design and construction. The design team is lead by the contractor's Design Engineer who is responsible for design QC under the monitoring and control of the Engineering and Technical Consultant. The construction team is lead by the Construction Project Manager (CPM). Construction QC, under direct management of the CPM is performed by a team of QC personnel and QC laboratories.
- QA is managed by two individuals and includes the development and maintenance of QC processes and procedures, oversight and the requirements for QA auditing. The contractor should designate a Design Quality Assurance Manager (DQAM) to manage the Design QA. Construction QA is under the direction of the Construction Quality Assurance Manager (CQAM) whom the contractor should also assign. The QO will provide the QC procedures and QA review, testing, and inspections necessary to ensure the project quality meets contract requirements

(Insert Project Quality Organizational Chart)

1.3. Quality Organization's Authority to Stop Work

The key QO staff above-mentioned has the authority to identify quality problems and to recommend, provide, and verify implementation of solutions. If there is evidence that the Quality Management Plan is not being followed, all QO staff have the authority to stop work until the appropriate quality procedures are implemented.

For the QO to stop work, the contractor's designated DQAM or CQAM must notify the Project Team and Project Management Office verbally, followed by written notice within 24 hours. The notification shall identify the reason for stopping the work. After receiving verbal notification, the PMO is responsible for completely halting work on the activity. The DQAM or CQAM will develop a written plan of action to resolve the issues and implement any changes. When the issues(s) have been resolved to their satisfaction, the DQAM or CQAM will provide verbal notification, followed by written notification, to both the PMO and Sponsors that the stop work directive is removed and work may begin immediately. The sponsors retains the authority to override the PMO decision if it feels that the proposed solution is not acceptable.

1.4. Roles and Responsibilities

The entire project organization has the responsibility and authority to contribute to the achievement of quality objectives. The responsibilities of all personnel who manage, perform, and ensure the quality of the work include:

- Initiate action to prevent the occurrence of non-conforming work
- Identify, evaluate, and document quality problems
- Recommend or initiate quality improvement solutions
- Stop the work when non-conforming work is identified, until the deficiency is corrected

The primary roles and responsibilities of the individuals that comprise the QO is divided between the Owners/Sponsors' side and the Contractor/Concessionaire's side summarize as follows

The Owners/Sponsors side:

- Project Manager (PM)
    - Responsible for organization and maintenance of a document control system for all quality data.
    - Ensure reviews coordinated with outside entities.

    - Coordinate quality check point (QCP) reviews.
    - Review and sign off Non-conformance Reports.
    - Assist in developing a plan for process change to eliminate non-conformance trends.
    - Initiate evaluation of Field Design Changes (FDCs) at Sponsors' request.
    - Review change requests to RFC packages (either RFI/FDC or Notice of Design Changes [NDCs]) for conformance with QMP.
    - Responsible for development and maintenance of shop drawing submittal log.

- Engineering and Technical Consultant (ETC)
    - The Engineering and Technical Consultant is the individual defined as being in responsible charge of the work. Responsible charge is defined as being personally responsible for the control and direction of engineering work within a professional engineer's scope of competence. The ETC shall be a Licensed Engineer registered under the Professional Regulation Commission of the Republic of the Philippines.

The following are the minimum requirements for the contractor's key personnel on quality management of the project:

- Construction Project Manager (CPM)
    - Functioned as Project Manager of the contractor side.
    - Manage the Quality Management Program for the project.
    - Designate appropriate trained personnel of the QO to perform audits.
    - Review project quality performance periodically for conformance to the QMP.
    - Coordinate with CQAM on the schedule for work elements to ensure adequate staff is available for QC inspection, sampling, and testing.
    - Cooperate in the development of strategies to correct quality issues.
    - Review quality issues, NCR's, and weekly inspection reports.
    - Develop construction procedures and work plans to meet all quality control requirements.
    - Meet with inspectors to review QC process requirements before starting any work element.
    - Provide training to all personnel in the appropriate procedure to be used for the work element under construction.

- Construction Quality Assurance Manager (CQAM)
    - The CQAM or his/her representative will be on site during all construction activities and shall be available or on the Project within two hours of being notified of a problem regarding the quality assurance of any Work.
    - Develop, implement, and manage the project construction QA program.
    - Oversee QA testing and inspection. Coordinate and schedule resources to provide appropriate QA inspection and testing for all construction efforts on a daily and weekly basis.
    - Provide training for the Design-Builder to ensure appropriate training quality procedures are in place, through pre-activity meetings and daily on site reviews.
    - Ensure all QO inspector staff has appropriate training and certification for the types of construction activities they will be overseeing.
    - Verify that all sampling and testing personnel have the appropriate training and certification for the types of materials they will be testing.
    - Has authority to stop any and all Work that does not meet the standards, specifications, or criteria established for the Project.
    - Maintain a Non-Conformance Report (NCR) log.
    - Maintain utility relocations inspection information.
    - Develop and maintain a list of lab equipment available, latest calibration data, and date of inspection.
    - Schedule quality check points as audits of on-going construction work for the duration of the project. Initiate RFI/FDCs due to constructability issues or differing field conditions.

- Design Quality Assurance Manager (DQAM)
    - The DQAM or his/her representative will be on site during all design activities.
    - Implement design portions of the QAP.
    - Train all design staff in the design quality process. Provide orientation, guidance, and explain to design personnel their responsibilities in fulfilling the QMP.
    - Audit and certify design packages and release for construction plans for conformance with the QMP.
    - Ensure appropriate QO engineers review all plan sheets for conformance with the Conformed RFP standards and criteria.
    - Has authority to stop any and all Work that does not meet the standards, specifications, or criteria established for the Project.

    - Compile and maintain documentation of design reviews and oversight reviews.

- Sampling and Testing Personnel
    - At the direction of the CQAM or his designated representative, take appropriate random samples and tests necessary to meet contract requirements, specifications, and plans.
    - Submit documentation to CQAM daily.

- Staff Inspectors
    - Inspect the work in a variety of areas, as required by the contract, plans, and project specifications, including embankment, PCC and asphalt paving, structural concrete placement, utilities, etc.
    - At the direction of the CQAM, inspect aspects of the work in which he/she is qualified.
    - Complete Daily Inspection Reports.
    - Prepare Materials Receiving Reports to document inspection and acceptance of permanent materials brought to the job site.

- Testing Technician
    - Perform tests on various materials in the laboratory or field in accordance with applicable test standards and procedures.

- QA Surveyor
    - Monitor and spot check staking data developed by the Construction Surveyor for compliance with QMP.
    - Perform QA audits of field construction surveying activities by verification of actual surveyed points.
    - At established quality check points, certify that survey data has been located, checked, and verified by the Construction Surveyor.

- Document Control
    - Organize and maintain records and documents pertinent to QO activities.

- Construction Superintendents
    - Execute work process according to work plans and procedures to meet all QC requirements.
    - At the direction of the CM or his designee, manage the taking of QC samples and tests to ensure that the Design-Builder’s means and

methods during construction are sufficient to meet plans, specifications, and contract requirements.
    - Submit documentation to CM on a daily or weekly basis.

- Process QC Staff
    - Provide quality control sampling and testing to develop and refine work processes to meet quality requirements and provide conformance to the contract, plans, and specifications.
    - Submit documentation to the CM on a daily basis as performed and needed.

- Design Manager
    - Direct and manage all design development, plan releases, specification releases, and QC.
    - Provide adequate staff to meet schedule.
    - Maintain a current status listing of the design section's work, expected audit dates, outstanding audit findings, and current document checking/review status. Maintain budget and schedule; report on these on a monthly basis.
    - Certify that the Released For Construction (RFC) plans meet all project criteria and the contract.

- Quality Testing Supervisor
    - Oversee all QA sampling and testing operations.
    - Report directly to CQAM.
    - Ensure that qualified testers are performing tests according to proper test procedures.
    - Must be onsite during testing.

- Materials Approval Engineer
    - Cooperate with the CQAM to review all Request for Approval of Materials (RAM) submittals and approve all permanent materials to be incorporated in the project.

- Design Engineers
    - Perform all engineering tasks to complete their portion of the plans, special provisions, or estimate in accordance with project criteria, standards, the contract, and the QMP

2. Administration

2.1. Personnel Training and Work Competencies

All personnel on the project will be made aware of the quality requirements of their position. Personnel should have a previous training or experiences related on their job duties and the skills necessary to complete their work right the first time.

Safety training should be presented by the contractor's Safety Manager. Safety training
includes:

- Orientation training, daily "Short course" field toolbox meetings,
- A monthly "Stand down" safety meeting, and
- As-needed training such as construction safety training.

Design quality training is presented by the DQAM. There may be different versions: one for the management staff to understand the quality requirements of design; another is for design staff to develop a detailed understanding of the quality process.

The CQAM develops the construction quality training for the project. There are three versions of this training.

- One version is for management so they understand the construction QMP processes, including the lines of authority and issue resolution procedures
- The second version is less formal, consisting of a preparation meeting for the foremen on the daily inspection, sampling, and testing procedures necessary for their work. The CQAM or designee will complete training of any work element to ensure the foremen understand the requirements of the QMP and specifications for that element. The CQAM will provide a review of the sampling and testing requirements for the element and will discuss development of work procedures to meet the quality goals. In addition, sampling and testing personnel are involved in discussing the quality plan for each work element. These preparation meetings occur before beginning any work element or as a review of the requirements at the start of each day. Refresher training will be conducted as needed at theweekly construction meetings and the project daily toolbox meetings, where the CQAM or his/her designated representatives will provide feedback on process and resolutions on quality issues.

- The third version is the formal training for Construction Quality Assurance (CQA) inspectors. Each inspector goes through a training program consisting of 80 hours of formal training or equivalent experience evaluation. In all cases there will be a minimum of 16 hours of orientation and safety training.

2.2. Document Control

Documents will be filed and controlled in accordance with the project Document Control Plan to be develop by the contractor. All documents will be maintained for the duration of the contract and organized, indexed, and furnish the Sponsors upon completion of Phase 2. Files will be maintained in an organized and controlled manner at the project office. The contractor must establish and maintain its own Document Control System (DCS) for electronically storing QA inspection and testing data.Digital cameras and video recorders shall be used to document construction of the project. Photos will be added to the website periodically to provide updated information on the project.

2.3. Document Revision

The QMP, Safety Plan, and Environmental Compliance Plan are documents which are used on an ongoing basis throughout the life of the project. Special distribution, tracking, and revision procedures are established for these documents to ensure that project participants are using only the most up-to-date versions. As updated versions become available throughout the life of the project they will be posted on the project tracking software and properly noted as to which a revision and the date of the revision. The QMP will be revised regularly on an ongoing basis throughout the duration of the project and therefore it is the project intention to distribute this document digitally via the project's tracking software. Before distribution, the author numbers hard copies of each controlled document and maintains a log to document the individual that each copy is assigned to. When revisions to a controlled document are required, they are reviewed and approved by the PMO. After revisions are approved, they are distributed by formal transmittal to all official document holders. The PM or his designee performs random audits on the controlled documents and the logs to verify that all copies being used are up-to-date and that the logs are current.

2.4. Audits

2.4.1. Schedule of Audits

ITEMS	AUDIT DATES OR FREQUENCY
Design Plans and Special Provisions	The ETC and DQAM audits each Preliminary Design, Final Design, and RFC submittal for conformance with the Quality Management Plan
Design Changes	The ETC and DQAM audits all documents developed as a result of Field Design Changes or Notice of Design Change for conformance with the Quality Management Plan
Construction	The PM and CQAM or their representative will audit construction work as performed through the use of quality check points throughout the duration of the project.
Off- site Plants	Audit plant operations and in-house QC program every 4 months during the construction season
Testing Labs	Audit equipment and personnel every 3 months during the construction season

2.4.2. Non- conformance Reports for Quality Process

Should the auditor find areas of non-conformance within any of the quality process areas, a Non- Conformance Report (NCR) will be written and processed. The non-conformance will be described and documented by the auditor. The ETC will review and the PM will sign off on the NCR. All NCR's will be processed through the CQAM since the CQAM will be responsible for
maintaining an NCR log. If trends (four occurrences or less) continue in non-conformance, the
CM, DM, CQAM, or DQAM will develop a plan and/or process changes to eliminate the non- conformance in the future, a schedule for implementation, required training, and a follow-up
review once the new procedure is in place.

2.4.3. Design Changes

2.4.4. As- Built Drawings

The contractors' design team prepares As-Built drawings for the project. As-Builts will be compiled towards the end of the project. Changes to the designs will be tracked via the Request for Information/Field Design Change/Notice of Design Change

NDC (RFI/FDC/NDC) process to ensure As-builts are accurate. These drawings conform to the requirements of the Municipal Engineer for the issuance of Certificate of Occupancy.

2.4.5. Documentation

All information required by the contract that is necessary to document acceptable performance of the work will be maintained in an organized manner and available electronically, to the PMO. CQA inspection reports and material sampling and testing results shall be submitted to PMO in electronic format within 24 hours following the inspection or test. Hard copy format of these reports and results will be available upon request by PMO. All quality, inspection and test activities, delays encountered, non-conforming work, and corrective action in regards to non-conforming work will be documented. The following are the minimum documentation needed to be stored in a database.

- Daily and Manpower Records
- Daily Occurence Log-
- Hazardous Materials
- Utilities
- Specific Items of Works
- Labor Compliance
- Quality Reports
- Materials and Equipment Conformance Record
- Substantial Completion
- Final Inspection

3. Investigation and Testing

3.1. Procedures to Ensure Consistency & Quality of Materials & Products Supplied by Vendors

The QO inspects all materials brought to the job site. The inspection staff documents the type of material, the general visual condition of the material, and indicates that the material is being stored and handled according to manufacturers' recommendations and specifications. The QO inspector examines the bill-of-lading, the certificate of compliance, and the on-site material to document that certifications are complete for the material and performs testing as necessary. A copy of the materials compliance certification is included with the inspector's daily report. The QO inspector uses the Materials Receiving Report form for this documentation. All of the documents

for this inspection are filed under the activity number as outlined in the document control procedure.

All materials and products delivered to the job site are marked and tracked in to ensure only acceptable materials are used and any rejected materials are removed from the job site. The CQA inspectors verify and document material incorporated into the project is from the approved list developed by the CQAM for material application.

The QO inspector documents in his daily inspection reports any issues with the acceptability, handling, or storage of materials and notifies the PM and CPM immediately. The project will correct these issues within 24 hours or the CQAM or their representative writes an NCR.

3.2. Procedures to Ensure Quality & Documentation of Field Investigations

All field investigations are subject to review for data consistency by a qualified senior engineer (discipline lead). These reviews are documented and any abnormalities checked by the senior engineer. All review comments and subsequent actions taken to provide consistent data are documented. These review documents become part of the design quality control documents for the appropriate Schedule Activity.

The construction surveyor checks field surveying and project mapping coordinate systems per the QMP. The QA Surveyor audits the survey data sheets and calculations to document conformance to the QMP. Field cross-sections are taken at various locations to determine the accuracy of the computer digital terrain model before using the model for design.

3.3. Procedures to Ensure Laboratory Qualifications

All QA testing will be performed by Department of Public Works and Highways (DPWH) approved laboratory reporting directly to the CQAM. The laboratory will meet the requirements of AASHTO R-18 (or other standard followed in the Philippines for Accreditation of Construction Materials Testing Laboratories) for qualified testers and calibrated/verified equipment and will accomplish the testing according to the test procedure they are performing. A Laboratory Quality Systems Manual will be developed and maintained. The manual will include:

- Staff qualifications, position description, and qualification process
- Listing of the test procedures used

- Equipment, including verification and calibration procedures and inventory Test reports, worksheets, and forms
- Sample management
- Diagnostic and corrective action
- Quality systems review

The CQAM will develop and maintain a list of the approved labs for the project.

4. Design

4.1. Quality Organization and Responsibility

The QO is described in Section 1 (Management) of this QMP. Design Quality Assurance is under the direction of the DQAM. The Design Quality Control is under the direction of the DM.

4.2. Overview of Design Quality Program

Detailed procedures applicable to the design quality processes must be provided in Design Quality Procedures (DQP) to be submitted by the contractor. The DQPs are referenced within Section 4.0, where appropriate. The DQPs are dynamic documents, and additions/revisions are issued, as needed, when the processes require modifications, refinements, or clarifications. The design quality program consists of several steps, involving:

- Planning the work.
- Preparing design documents.
- Checking and reviewing the documents.
- Making revisions.
- Auditing and Certifying.
- Releasing documents for construction.

There are iterations to each of the steps, depending on the specific type of document. Specifics regarding the steps are:

- Prepare Design Documents. The design team prepares the design documents, using the established design criteria for the project and appropriate inter-discipline and Task Force coordination (via regular scheduled meetings, written communications, etc.). Task Forces (which

include representatives from the Contractor, Designer, and PMO) meet weekly or bi-weekly during the design phase and periodically thereafter. Some task forces may be added, combined, or eliminated as design progresses. The Task Forces will generally be discipline specific such as Quality, Buildings, and Structures.

- Check. All design documents are subjected to in-discipline design checking process (red- yellow-green color-code system). For design documents where inter- discipline design checks are warranted, an Inter-Discipline Design Check (IDC) is performed. The Checker checks the design documents following the procedures in Section 4.3.
- Revise. Checker corrections and comments and review comments are evaluated and incorporated into the documents by the Originator, as appropriate.
- Audit. The DQAM audits the design documents and certifies them as meeting the requirements of the QMP.
- Document Control. Document Control logs and copies audited design documents, files them in the project files, and transmits electronic versions to PMO and other approved project stakeholders.
- Review. PMO, identified project team Reviewers, and other approved project stakeholders review the design documents and document comments with approved form.
- Comment Resolution Meeting. The design team, PMO, and other Reviewers meet following the review to discuss and agree on comments.
- Revise. The design team makes the necessary revisions to the design documents to address the comments as agreed upon and advance the design to the next level.
- Repeat check/audit/review/revise cycle through each required submittal described in Section 4.4.
- Prepare and Audit RFC Submittal. The design team prepares the RFC documents in accordance with Section 4.7 and submits the RFC package to the DQAM. The DQAM audits and certifies the documents in accordance with Section 4.5, indicating that the documents are approved for RFC. The DQAM stamps the documents “Released for Construction” in accordance with Section 4.7.
- Release for Construction (RFC). The DM transmits the signed and sealed RFC Design Documents stamped “Released for Construction” to Document Control along with the DQAM’s certification that the design package may be released for construction.

- Document Control. Document Control logs and copies the audited RFC documents, files them in the project files, and transmits electronic versions to PMO and other approved project stakeholders.
- Acceptance of Final Design. PMO acceptance of the final design occurs after PMO acceptance of construction.

4.3. Design Checking

4.3.1. Design Plans, Specifications, Calculations, Reports, and Other Design and Construction Documents

4.3.1.1. Inter-Discipline Design Check

An Inter-Discipline Design Check (IDC) is used for any design reports, plans, and specifications that involve more than one discipline. The objective of the check is to coordinate design between and within disciplines in order to verify there are no conflicts, omissions, or misalignments between integrated or adjacent work prior to in-discipline design checking, audit, and review. The Design Manager is responsible for designating the appropriate Reviewers for each design package.

The Originator (often the designer) prepares a Review Print of the document(s) by reproducing the document and applying the Review Print stamp (Review Exhibit) to the first page of each document and forwarding it to the Design Manager. In the space allotted in the Review Print stamp the Design Manager lists the Reviewers and their review responsibility for the document. The designated Reviewers review the document(s) with respect to their areas of responsibility or expertise and mark their comments on the documents. Reviews are assigned a color to highlight information that is correct and mark comments so that each Reviewer's mark-up is easily differentiated. Once the Designer examines the Review Prints and resolves and incorporates any comments, the design package is ready for checking per Section 4.3.1.2.

NOTE: It is recommended that only one document Review Print be circulated for each review to minimize duplication or conflicting comments. However, when time constraints or distance considerations dictate, more than one copy may be used.

(sample stamp here)

4.3.1.2. Red-Yellow-Green Color-Code System (In-Discipline Design Checking Process)

Plans, specifications, calculations, reports, and other design documents (with the exception of geotechnical documents) are checked using a red-yellow-green color-code system, which is defined below. The documents are checked for conformance with the criteria, standards. The person checking the document, the Checker, shall be a qualified professional who has not been involved in the particular aspect of the design being checked.

There are four steps in performing the design checking process:

- Check: The Originator makes a copy of the design documents and applies the check print stamp (Checked Exhibit) for all persons involved in the checking process to sign- off. The stamp also includes the design package/submittal number and date, check print number, and signature of the Originator of the document with the date. If all the individuals involved in the checking process will have consistent roles on the entire package to be checked, a cover sheet may be added to the package. A single check print stamp is applied to the cover sheet, instead of each individual sheet in the package. A clear description of what the check print applies to (e.g. sheet numbers or number of pages) must be included on the cover sheet. The Checker validates all unchecked information on the document, including assumptions, calculations, technical specifications, drawing presentation, and details, using the color-code system as follows:

    - Red = an error in the document
    - Yellow = information is correct.
    - Pencil or blue = a comment that is not necessarily an error.

    When the check is complete the Checker signs and dates the check print stamp.

- Backcheck: The Backchecker (usually the Originator of the document, but may be another designated designer other than the Checker) reviews the Checker corrections and comments (red and blue/pencil marks). If the Backchecker agrees with the comments, he places a green check next to the red. If the Backchecker does not agree with the comments and then explains to the Checker a valid reason why the original item is correct, the

Backchecker then writes the word “stet” in green adjacent to the red marks to indicate that the red is no longer valid and that the Checker has withdrawn his comment. Once all corrections/comments are reviewed and color coded, the Backchecker signs and dates the check print stamp.

- Correction/Update: The Corrector (usually the Backchecker/Originator) makes the revisions to the original document according to the agreed-upon changes marked on the checkprint. When updates are complete, the Corrector circles, in green, the changes made on the check print and signs and dates the check print stamp on the Corrected line.
- Verification: The Verifier (usually the Checker, but may be another designated designer other than the Corrector), reviews that correction/update revisions were made completely and correctly. The Verifier then yellows over the red marks on the check print and signs and dates the check print stamp.

Completion of these design checking procedures are documented by:

- Using the color code system.
- Signature and date on each appropriate line of the check print stamp

4.3.2. Computer Programs

All software programs to be used for design must be verified by the PMO for validation, and added to the Verified Computer Program Log for the project.

4.4. Design Submittal

The three types of submittals are described below. Review procedures are defined in Section 4.6.

4.4.1. Preliminary Design Submittal

The intent of the Preliminary Design submittal is to provide a formal opportunity for PMO, the Contractor, various design team disciplines, and other approved project stakeholders to review the construction documents in order to ensure that: the design is progressing appropriately and proceeding in the right direction; the plans reflect Contractor requirements for construction; design features are coordinated; and there are no fatal flaws within a given discipline or between disciplines. The contents of the preliminary submittal for each discipline shall be as mutually agreed by members of the applicable Task Force.

4.4.2. Final Design Submittal

The Final Design submittal package is prepared when the design for a given element or area is 100% complete. The submittal may include plan sheets, specifications, technical memos, reports, calculations, and other pertinent data, as applicable. The submittal shall include Form resulting from the Preliminary Design Submittal. As a result of the on-going discussion and resolution of design and construction issues via the regularly scheduled Task Force Meetings, Core Meetings, and informal reviews, it is anticipated that there will be very few revisions or changes at this stage. If there are no comments on the Final Design Submittal, the package is ready for the RFC Submittal.

4.4.3. RFC Submittal

The RFC submittal is prepared when all comments from the Final Design Submittal have been addressed and appropriately incorporated. Refer to Section 4.7 (RFC Procedure) for details on the RFC process.

4.5. Design QA Audits and Certification

After each design package has been checked and before distribution by Document Control for review or RFC, the DQAM performs an audit to verify that the documents have been checked and/or reviewed in accordance with this QMP. If the design package has previously been reviewed, the DQAM will also verify that prior comments have been resolved and incorporated, as applicable. The table hereunder summarizes the document requirements for Design QA audits:

Submittal	Original Plan Sheet	Check Print of Plan Sheet	IDC Check Print of Plan Sheet	RCSR with final disp. and QC initials/ date	Original Calcs	Checked Calcs	Support Docs
Preliminary Design	✓	✓	✓		✓	✓	✓
Final Design	✓	✓	✓	✓	✓	✓	✓

RFC	✓	✓		✓			
NDC	✓	✓	✱		✱	✱	✱
RFI/FDC	✓	✓	✱		✱	✱	✱

✱ - The DM determines the need for supporting calculations and internal reviews based on the significance/magnitude of the change.

Form DQA (Design Quality Audit Checklist) is used to perform, record, and certify the audit. A non-conformance with the quality process results in the documents being returned to the Originator to bring the package into compliance. If the audit finds all documents in conformance, the DQAM completes and signs Form DQA to document and certify that the QMP requirements have been followed.

At the appropriate time, the DQAM also uses Form DQA to certify that the design package is approved for RFC.

The DQAM shall conduct audits with care, but in a diligent and timely manner so that the design schedule is maintained. PMO shall have access to all audit documentation.

4.6. Design Review

The PMO, the design discipline leads, appropriate construction personnel, and other approved project stakeholders (e.g., affected local government and utilities) shall have input on the design as it is developed through:

- On-going discussion and resolution of design and construction issues through weekly or bi- weekly Task Force Meetings and Core Meetings, as well as unscheduled ad hoc follow-up meetings. The Task Force meetings also include technical coordination discussions, as needed, which address the design approach, suitability, and conformance with contract requirements.
- Formal design reviews performed on the Preliminary and Final Design submittals.
- Informal PMO and other approved project stakeholder Over-the-Shoulder reviews.

This multiple stage review process is used to ensure that all final documents are compatible with project functional and technical requirements, meet required design criteria and contract requirements, and address review comments.

4.7. RFC Procedure

- After the Final Design Submittal review, the design team makes the necessary revisions to the design documents to address the comments.
- The design team checks all revisions made to the Final Design Submittal package in accordance with Section 4.3.
- The DM ensures all Final Design Submittal review comments are addressed, resolved, and incorporated.
- The DM assembles the RFC Package and has the Licensed Engineer sign and date their seal on the documents and verify the date and revision number on each. The DM submits the RFC Package to the DQAM for audit.
- The DQAM performs the RFC Package Review Audit and Certification in accordance with Section 4.5. The DQAM signs Form DQA to certify that the design package may be RFC'd.
- The DQAM stamps each individual plan sheet and/or special provision as Released for Construction Exhibit with the date, and returns the package along with Form DQA to the DM.
- The DM transmits the signed and sealed RFC'd documents and the completed Form DQA to Document Control.
- Document Control logs, copies, distributes, and files the RFC documents in accordance with the Document Control Plan.

For RFC of documents associated with changes to previously RFC'd documents (i.e. NDCs and RFI/FDC's), refer to Section 4.9 of this QMP.

(Release For Construction Stamp)

4.8. Acceptance of Design

The PMO acceptance of the design will occur after acceptance of construction. The QO audits provide documentation for PMO that all design packages released for construction are in compliance with the QMP.

The following items are transmitted to PMO in accordance with the Document Control Plan to document final design:

- As-Built design plans and specifications Design calculations
- Design reports
- Electronic files
- Manufacturers' warranties
- Project Design Documentation (PDD)

4.9. Design Change During Construction

For design changes made after drawings have been RFC'd, notification of impending design change is distributed in accordance with the Document Control Plan requirements (for Request For Information/Field Design Change/Notice of Design Change). The design change process allows for design changes during construction to maintain or improve quality, constructability, or to modify the design to address unexpected or changed conditions in the field. All RFI/FDC/NDC's are stored in the RFI module of the Design-Builder's tracking software (refer to Document Control Plan for additional information regarding document control of these issues).

Control of Design Changes. Each time a plan or special provision is released, it is given a sequential number of the release and the date it is released. This number and date are tracked by Document Control to control each plan change that is RFC'd.

Plan sheets or special provisions have the changed area clouded. On plan sheets, the revision number is placed inside a triangle, next to the clouded area and also in the revision box with an explanation of the changes made to the document along with reference to the RFI/FDC/NDC number associated with the change and the date the sheet is RFC'd. For each subsequent revision to the plan sheet, the previous cloud is removed and the new change area is clouded along with adding the associated revision number in a triangle next to the clouded area and in the revision box. The revision box provides a history of the changes to each plan sheet and RFC dates.

4.9.1. Design Change Initiated by Design Team- Notice of Design Change

As design progresses, the design team may determine that a previously released package or plan sheet requires a change to maintain the overall quality of the design. The Designer initiates a notice of design change through the RFI module in the project tracking software to the Construction Project Engineer. The NDC notification includes a

description of the change, the drawings or special provisions the change relates to, and the date when the updated documents will be ready for RFC.

The contractor will not construct any items affected by the identified changes until after the updated plans are RFC'd. Changes to documents that have previously been RFC'd are made in accordance with "Control of Design Changes" per Section 4.9, above.All plans, calculations, and special provisions with design changes must meet the same quality control checking procedures as outlined in Section 4.3.1 of this QMP.

During development of the design document revisions, the PMO is given over-the-shoulder review opportunities so that their comments and feedback can be incorporated prior to the DQAM's RFC audit. When applicable, the contractor's Environmental Compliance Manager reviews the documents for compliance with project environmental commitments, mitigation requirements, and permits. The DM determines the need for internal design reviews based on the significance/magnitude of the change.

The NDC package is treated like a Final Design Submittal, and RFC of the documents (including DQAM audit) follows the RFC procedure steps in Section 4.7 of this QMP.

4.9.2. Design Change Initiated in the Field- Request for Information/ Field Design Change

An RFI/FDC may be issued to improve constructability, address differing field conditions, increase cost effectiveness, or address errors or ambiguities in the plans.

- Initiation- The PMO or the contractor's construction staff may initiate a RFI/FDC through Contractor's RFI module in the Design-Builder's tracking software to the Construction Project Engineer. Via the RFI module, the party requesting the RFI/FDC explains the issue and proposed change, listing any plan sheets or specifications affected by the change, and including any schedule requirements of the change. Red-lined plans sheets or specifications should be attached if necessary to clarify the proposed change. It is not acceptable to issue an RFI/FDC to address non-conforming work. Work that has not been constructed per plans, specifications, and contract requirements is deemed non-conforming and must be addressed using the process detailed in Section 5.9 (Non-conforming Work) of this QMP.

- Validity of RFI/FDC Request- The Construction Project Engineer reviews all RFI/FDC's The Construction Project Engineer determines whether or not the RFI/FDC requires design input and the procedures outlined in either Section 4.9.2.3 or 4.9.2.4 are then followed. Design input is required whenever plan sheets or specifications need to be corrected or revised.
- RFI/FDC Procedure—Design Input Not Required. For RFI/FDC's where design input is not required and the RFI/FDC is completely handled in the field, the RFI/FDC is distributed and responded to in accordance with the Document Control Plan. The contractor incorporates changes into the final work. The contractor's design team is responsible for reflecting changes as a result of the RFI/FDC on the as-built plans.
- RFI/FDC Procedure—Design Input Required. For RFI/FDC's where design input is required (i.e., corrections or revisions are required to the sealed documents), the Construction Project Engineer distributes the RFI/FDC to the Design Manager via the Design-Builder's tracking software in accordance with the Document Control Plan (copies to the design team require action, copies to PMO at this point are informational).

  Revisions to Plans or Specifications that Do Not Require Re-release of Documents

  The Design Manager forwards the RFI/FDC, via the Design-Builder's tracking software, to an appropriate member of the design team for review and response. The design team member handling the issue is deemed the Responding Engineer. If the Responding Engineer determines that the changes resulting from the RFI/FDC are minor or a written response will provide sufficient clarification of the issue, the response may consist of a written response provided directly in the "Response" portion of the RFI/FDC within the Design-Builder's tracking software. Where applicable, a hand sketch or a copy of the plan sheet affected may be attached via the Design-Builder's tracking software to the response, with the change clearly marked by hand and clouded with reference to the RFI/FDC number.

  During development of the response, the PMO is given over-the-shoulder review opportunities so that their comments and feedback can be incorporated in a timely manner. The response is checked by another Designer and when applicable, reviewed by the Environmental

Compliance Manager. Within the response, the Responding Engineer includes the following, as applicable:

- The name of the person who performed QC on the response and the date
- A statement that environmental concurrence was received, by whom, and when
- A statement regarding information from discussions or over-the shoulder reviews with PMO

If calculations are performed in preparation of the response, the calculations are checked in accordance with the procedures detailed in Section 4.3. The calculations are not distributed with the response unless specifically requested; however, the calculations are filed with the other RFI/FDC documents in the Design-Builder's tracking software. Once the design response is complete, the DM distributes the RFI/FDC in accordance with the Document Control Plan.

The Design-Builder incorporates changes into the final work. The Design-Builder's design team is responsible for reflecting changes as a result of the RFI/FDC on the as-built plans (see Section 2.6).

Revisions to Plans or Specifications that Require Re-release of Documents

The DM determines the design team member best suited to address the RFI/FDC and forwards them the RFI/FDC for review and response. The design team member handling the issue is the Responding Engineer. If the Responding Engineer determines that the RFI/FDC requires revisions to plan sheets or specifications, there are two components to the RFI/FDC response:

- Written Response: When the response is complete, the Responding Engineer documents the required changes directly in the "Response" portion of the RFI/FDC within the Design- Builder's tracking software. Within the response, the Responding Engineer includes the following, as applicable:
    - The documents to be RFC'd
    - A statement that environmental concurrence was received, by whom, and when

    - A statement regarding information from discussions or over-the shoulder reviews with PMO
- RFC of Design Documents: All plans, calculations, and special provisions created or modified as a result of the RFI/FDC response must meet the same quality control checking procedures as outlined in Section 4.3.1 of this QMP. During development of the response, the PMO is given over-the-shoulder review opportunities so that their comments and feedback can be incorporated prior to the DQAM's RFC audit. When applicable, the Environmental Compliance Manager reviews the documents for compliance with project environmental commitments, mitigation requirements, and permits. The DM determines the need for internal design reviews based on the significance/magnitude of the change.

The RFI/FDC package is treated like a Final Design Submittal, and RFC of the documents (including DQAM audit) follows the RFC procedure steps in Section 4.7 of this QMP.

Changes to documents that have previously been RFC'd are made in accordance with "Control of Design Changes" per Section 4.9, above.

5. Construction

This section defines the quality organization and systems designed to ensure that the specified materials are used and that the installation is acceptable to produce the required end product. The implementation of the Construction Quality Plan procedures is fundamental to the success of the project and will ensure that PMO receives a product that complies with their requirements and addresses concerns regarding quality, durability, and life-cycle maintenance costs.

5.1. Construction Quality Organization and Responsibilities

The QO, as defined in Section 1 (Management) of this QMP, provides the necessary supervision, quality control and quality assurance processes (inspection and testing) of all items of work, including that of all subcontractors and suppliers, which will ensure compliance with the specified requirements.

The QO will conduct the Quality Assurance (QA) inspection and testing in accordance with the contract, including the QMP. The construction materials elements

of the QMP will be implemented in accordance with the requirements of the PMO. The PMO personnel will perform quality verification testing (QVT) to statistically compare and validate the results of the QA's tests. If the QO's QA tests are statistically validated by the PMO tests, then the QO's QA test results will become part of PMO's basis for acceptance of the work. The PMO will perform split sampling and testing for Independent Assurance (IA). The PMO also will provide quality verification inspection (QVI), oversight inspection of the QO's work. The CPM and QO will facilitate with PMO to fulfill its responsibilities of exercising due diligence in overseeing the construction.

5.2. Work Condition

The project will deliver the project as a model for the construction industry in eliminating or controlling accident risks to construction personnel, the general public and the environment. The project team should be founded on a philosophy of health, safety, quality and environmental excellence. Believing that every incident is preventable. Personnel, public, and environmental hazards can be identified and eliminated using this approach; and successful field implementation of the Safety program will contribute to delivering a quality product on schedule and within budget, while minimizing public inconvenience.

5.2.1. Safety Program Commitment

The project is committed to excellence and leadership in workplace safety throughout our operations. The contractor should exceed PMO & Sponsors' expectations through safe, innovative, and environmentally sound practices in delivering this project.

The following core principles will guide the project team and create a workplace that encourages participation from all staff:

- Management provides the leadership and resources to enhance employee awareness and participation in creating a safe and environmentally sound work environment.
- Safety and environmental processes are integrated in our business management and project delivery systems, ensuring systematic recognition and reduction of risks to personnel, the general public, and the environment, including pollution prevention.
- The subcontractors are required to achieve and maintain excellence in safety and environmental practices.

- Occupational health and safety regulations and environmental laws are established as our minimum acceptable criteria.
- The effectiveness of our safety and environmental programs is continually improved by setting and reviewing objectives and targets, and reporting performance metrics to the PMO and our staff.
- Construction staff is encouraged to exercise sound safety and environmental practices in all aspects of their lives, not just at work.

5.2.2. Communication

During periods of high levels of construction work and complex construction activities, safety, environmental and quality meetings are held as frequently as once, or even twice a day. These meetings review the tasks before the construction activities begin to ensure these items are addressed throughout activity execution. After a construction activity is completed, any safety, environmental and quality issues observed or ideas for improvement developed are discussed at post-activity review meetings. Because of the high priority this project place on safety, quality, and environmental issues, the importance of communication about this critical topic cannot be overemphasized.

5.3. Materials

The CQAM or their designated representative will document and inspect all materials delivered to the job site prior to use and within 24 hours of delivery. The CQAM will keep records of each delivery, material bill of lading, certificate of compliance, and test results. The CQAM will develop a materials tracking system to track the materials quantities and acceptance status.

The CQAM or their designated representative will identify and log the material. The identification will include any information clarifying where the material is to be used. All material, each piece of equipment, or element of work will be tagged, labeled, or stamped to indicate whether the material has been accepted. To preclude inadvertent bypassing or duplication of such inspections and tests, the items will be identified either when they have satisfactorily passed required inspections and tests or upon acceptance when the materials are delivered to the job site.

All materials will be stored per the manufacturer’s recommendations and specifications. Once a month, or as required by the manufacturer, the QO will inspect the storage sites and the stored materials for compliance with the manufacturer’s

recommendations and project specifications. Additionally, the QO will inspect all materials for damage caused by improper storage or handling before incorporation into the project. If damage has occurred as a result of improper storage or handling, the material may be rejected. The QO inspector will document any issues with storage or handling of materials in his daily inspection report.

The CPM can request the acceptance of small quantities without normal sampling and testing frequencies, which the PM will accept or reject this proposal. The CQAM will discuss at the Quality Management Team meetings every week any issue pertaining to materials for the project. Any rejected materials will be removed from the project within 24 hours of rejection or the PM will write an NCR.

5.4. Inspection

5.4.1. Work

The CPM and the QO meet weekly for quality meetings and on a daily basis as needed to review and update the inspection schedule. The CQAM will provide inspectors for each work activity requiring an inspector. The CQAM also will provide appropriate personnel for QA sampling and testing efforts for all construction activities.

The CQAM will schedule the inspection of utility relocations with the utility owner before construction. These inspections will be documented and placed in the quality record for that particular utility relocation. The CQAM also will schedule quality check point audit inspections with the CPM and PMO.

The purpose of the daily inspections is to document that construction practice, finished work and sampling and testing meet the requirements of the QMP and project documents.

Before beginning a work activity that requires inspection and testing staff, all inspectors and sampling and testing personnel are at the site of the activity. The CQAM or designated representative will inspect the site before activity starts to determine readiness of the work area. The CQAM will check the quality records to determine if a quality check point conformance has been obtained, if necessary. Once these items are completed, work may begin.

QA sampling and testing will be performed randomly by the QAO in accordance with the testing plan for each material provided to the project. The plan will be

developed using a Random Numbers Table or by using a random number table generated in a spreadsheet format and it will reflect the total estimated plan quantity. The plan will be submitted to PMO or posted in the project tracking software before placement of the material on the project.

The QO maintains an inspector's daily inspection report (IDR) containing each work activity that has been inspected. The inspector's daily inspection report is part of the activity file. The IDR's will be generated digitally and hard copies will be printed, reviewed, signed and filed.

The Process QC staff will assist in developing appropriate work procedures to meet the requirements for the project. The Process QC staff will make preliminary on-site tests, and will modify the processes as necessary to meet contract, plan and specification requirements for the project. QC testing will be performed at the time and location as determined by the CPM.

5.4.2. Production Plants

If there is a need for the contractor to construct a concrete production plants, the acceptance sampling and testing in the plant and on site will be performed by the PMO.

The concrete batch plant for the production of Portland Cement Concrete (PCC) will be a National Ready Mix Concrete Association approved plant. For production of PCCP, and structural concrete, the ETC will review the testing data for conformance with the plans and specifications. The concrete mix design will be developed per the DPWH Standard Specifications.

5.5. Field Procedures

The contractor will use appropriate field procedures to provide a product that meets the requirements of the contract, plans, and specifications.

The contractor will plan the work effort and prepare all working drawings needed to accomplish the work before beginning construction. The CPM shall understand the field procedures, plans, and specifications. The CPM will discuss QA requirements with the CQAM or a designated representative before beginning work. The CPM will describe the work requirements and QA requirements to all the workers involved in the work.

The CPM will begin construction of the work and the Project QC staff will perform the tests deemed necessary by the CQAM to develop processes that provide conformance to the contract, plans, and specifications. The construction team will modify its processes, as deemed necessary by the CPM and CQAM, to keep the work in conformance with the contract, plans and specifications.

The CPM will provide training to all personnel in the appropriate process to be used for each work element under construction. If processes change, the CPM is responsible for training the workers in the new processes.

Special procedures required for unique product or design conditions are outlined in special provisions developed by the design team. These procedures cannot be modified without written change authorization from the design team.

5.6. Dispute Resolution

If a dispute arises in the QO sampling and testing process, the following dispute resolution system is recommended.

Initially, through the Quality Management Task Force meetings, the CQAM, and PMO will review technical procedures, test methods, sampling procedures, equipment certifications, and lab procedures to look for procedural or technical causes for test discrepancies. Observation of sampling and testing method, as well as inspection of test equipment will be performed by an IA inspector. Corrective action is to be taken immediately if the cause of the discrepancy is located during this review process. However if there is a problem that requires immediate attention and resolution the CQAM or PM has the authority to stop the work until a satisfactory resolution is reached and the work can safely proceed with the proper corrections. If the cause is not located and corrected, the issue is escalated as follows.

A statistical analysis will be performed using the approved project procedure. If agreement is not reached, resolution will be reached by following the procedures required by the applicable sections of the project contract.

5.7. Shop Drawings and Temporary Construction Drawings

5.7.1. Shop Drawings

The Project Construction Engineer will obtain appropriate shop and erection drawings (for work permanently incorporated into the project) from fabricators, and vendors and forward to Design via Document Control, where the drawings are assigned a subcontractor submittal identification number. Drawings that require engineering calculations or engineering judgment shall be developed under the supervision of, and sealed by, a licensed engineer registered in the the Professional Regulation Commission (PRC) of the Republic of the Philippines. The Document Control Administrator then completes the submittal tracking data for the project. The log, which is maintained in the project's tracking software, has the following columns of information in the specified order:

- Submittal Identification Number
- Receipt Date of Submittal Document – Logged into the notes of the submittal
- Date Sent to Reviewer/Design Team
- Date Reviewer Received
- Date Response is due
- Date Received Back from Reviewer/Design Team (Response Date)
- Status/Action or Decision of Review
- Date Returned to the Submitting Company. - Logged into the notes of the submittal.

Each time a submittal is received, the DM or their designee logs in the submittal. The drawings are forwarded to the design team with all of the above submittal information attached to the shop drawings. If a submittal consists of drawings previously approved, these drawings are forwarded to the design team for information only and do not require review, stamping, or signatures.

If review is necessary, the drawings are first reviewed for constructability by the Project Construction Engineer. Once submitted to the Design Team, the reviewer, chosen from the design staff, places a shop drawing review stamp on the drawings. He/she completes a technical review of the drawings to determine their compatibility with the plans and specifications. The reviewer returns the drawings with his/her comments to the DM; the DM forwards them to the Document Control, who then delivers them to the Construction Quality Assurance Manager (CQAM) for review.

The CQAM reviews the drawings, stamps them "For Construction" and returns them to Document Control to formally transmit and distribute. If the drawings are not approved, they must be returned to the vendor for correction. Revisions are resubmitted through this process until they are approved. The contractor supplies the PMO with a copy of the approved drawings at least one business day before the start of any on-site work

detailed in the drawings. For off-site fabrication, the approvals and drawings are forwarded to PMO at least seven business days before beginning fabrication. No changes are made to any approved shop or working drawings without resubmitting the drawings and beginning the review process again.

Shop drawings are reviewed and approved by the design team. Falsework, erection, and shoring drawings are stamped and signed by a licensed engineer in the PRC and reviewed by the CQAM and ETC.

To be approved, a shop drawing is:

- Submitted to the ETC for review and comment
- Signed by the design reviewer
- Stamped “Approved for Construction”
- Reviewed by the CQAM and ETC, and stamped “For Construction”

5.7.2. Temporary Construction Drawings

The Project Construction Engineer must obtain appropriate falsework, shoring, and erection drawings from fabricators, vendors, subcontractors, or in house. Drawings that require engineering calculations or engineering judgment shall be developed under the supervision of, and sealed by, a licensed engineer registered in the the Professional Regulation Commission (PRC) of the Republic of the Philippines. Falsework, shoring, erection, or other temporary construction drawings require a similar QC and QA as other design documents. Temporary construction drawings shall be submitted for one design check and constructability review, revised and issued for construction. The CQAM and ETC shall audit and certify temporary construction drawings.

5.8. Testing

5.8.1. Test Procedures

The QAO completes field sampling per the requirements of the Conformed RFP. These requirements cannot be changed without written authorization of the CQAM and approval of PMO.

The CQAM schedules QA sampling and testing staff to support the normal progression of the work.

The QAO performs testing for all work elements requiring acceptance tests. Tests are conducted in accordance with the project requirements. The CQAM performs statistical analysis of the QAO acceptance tests and the quality verification (QV) tests performed by PMO personnel. If the QAO tests are statistically validated by the PMO tests, then they form the basis of acceptance. If they are not validated then the CQAM and the PMO will refer to section 5.6 of the QMP.

Initially, QAO material acceptance tests and the PMO tests will be performed at the same frequency to establish a confidence level in the results of the QA and QV tests. The QAO will exercise sound judgment in its testing approach and may increase the frequency of testing in situations in which quantities may be small but location is of importance.

The QAO documents tests on forms developed by the contractor and approved by PMO. Test results will be prepared by contractor and documented in the PMO-provided Statistical Analysis of Materials Software. The QAO will audit all test procedures to ensure that they meet the AASHTO, ASTM, or the project requirements.

5.8.2. Equipment Certifications

The CQAM will check all measuring and testing devices to evaluate the working order, condition, calibration and certification of the equipment. The calibration verification of all testing equipment will meet the requirements of AASHTO R-18 (or other standards approved in the Philippines). The CQAM or his designee will maintain calibration records of required activities. The calibration program is set up in compliance with the contract documents. The QAO laboratory is required to provide and maintain the following:

- A list of testing equipment proposed for each test procedure, including all calibration data.
- A copy of all laboratory inspection report by WSDOT along with documentation that deficiencies, if any, have been corrected.

QC procedures ensure that tools, gauges, instruments, and other measuring devices are properly maintained, controlled, calibrated, and adjusted. The Laboratory Manager is responsible for the continual calibration and maintenance of the measuring and testing equipment per AASHTO R-18. Label each piece of equipment with the necessary seals or tags that specify the date and by whom it was calibrated. Documents verifying the calibration of test and measuring equipment are retained in the materials testing laboratory.

5.8.3. Instrumentation

All instrumentation is installed, maintained, and monitored in accordance with manufacturer specifications. The appropriate personnel are assigned to install, maintain, and monitor all instrumentation.

5.8.4. Coordination

The CQAM coordinates with local agencies and Utility Owners to insure all inspections and testing requirements are met. The inspections and testing are documented and placed in the quality record for that particular utility or local agency.

5.8.5. Qualifications of Labs

All QA testing will be performed by a PMO-approved laboratory reporting directly to the CQAM & ETC. The laboratory will meet the requirements of AASHTO R-18 for qualified testers and calibrated/verified equipment and be able to accomplish the testing according to the test procedure they are performing. The CQAM & ETC will inspect the labs and check their certification a minimum of once every six months. The labs will provide all equipment certifications and calibration dates to the CQAM & ETC for the quality records for the project.

All equipment used, whether at an established laboratory or satellite (field) laboratory, has to be calibrated/verified. The labs have uniform policies and procedures per AASHTO R-18 to ensure that they are providing testing services in compliance with applicable test methods. The policies and procedures address inspection and calibration of testing equipment, as well as a correlation-testing program between the laboratory and portable or satellite facilities.

The QA laboratory will not under any circumstances perform any QC testing whatsoever. If a laboratory is disapproved, it shall not perform any tests for the project

5.9. Non- Conforming Works

During construction and placement of materials, QO field personnel reject workmanship or materials that are not in accordance with the specifications. The construction field personal then have the opportunity to correct the workmanship or materials in order to bring the work in accordance with the specifications. The non-conformance process

presented below is followed for completed work or materials that do not meet the plans or specifications.

5.9.1. NCR Identifications

The design and construction teams and QO staff are responsible for identifying non-conforming work. PMO may also identify potential non-conforming work to the CQAM or CPM for action. Any completed work not meeting the plans, specifications and contract requirements is to be deemed non-conforming. Anyone in the QO may prepare a non-conformance report (NCR) for review by the CQAM. This report must detail the area of the problem, and cite from the plans, specifications or contract, how or why the work does not conform. The NCR must be submitted to the CQAM in writing within 24 hours of identification, and a copy posted in the project's tracking software for all parties to review. The outstanding reports will be discussed in a review of the NCR log at the weekly quality management task force meeting.

5.9.2. NCR Remediation

The NCR has several avenues for remediation depending on the severity of the problem. Among them are:

- Remedy the situation—Contractor corrects deficient work.
- Prepare an RFI with proposed remedy to obtain the intended design purpose.
- Design-Related NCR Issue—The DQAM or CQAM will issue the NCR and request design review of the non-conformance. The QO is responsible for providing detailed information for the design team to review. The design engineer who signed and stamped the drawing for the work will evaluate and determine whether a non-conformance exists, and the effect of the non-conformance on performance, safety, durability, long-term maintenance, and the life of the item. Remedial actions will be documented and stamped by a licensed engineer in the Philippines. The DQAM must also sign the NCR, stating that remedial actions to be used have undergone the same level of checking, inspection, and testing as required for the original design.
- Remove and Replace—The CQAM may require the CPM to remove and replace any non- conforming work.

Remediation must have PMO concurrence and may require a change order.