Submittal Distribution Sheet

Project Name	SWIM Engineering and Construction Quality Assurance Support	**Submittal No.**	0006_Rev0
Project Location	Northern Afghanistan	**Date Received**	September 17, 2019
Activity Number	A-007	**Date Sent to USAID**	October 8, 2019
Contract No.	AID-306-C-16-00010	**Date Sent to Contractor**	NA
Contractor	DT Global	**Drawing No.**	NA
Description	SWIM RQA/QCP / SWIM RQA/QCP Annexes	**Detail No.**	NA
Requested Contractor Response Date		**Specification No.**	NA
Request Type:	☒ Technical ☐ Administrative		
Transmittal Type	TECHNICAL ☐ **Electrical** ☐ **Mechanical** ☒ **Civil** ☐ **Architectural** ☐ **Fire Protection** ☐ **Plumbing** ☐ **Structural** ☐ **Communication** ☐ **General** ADMINISTRATIVE ☒ **Quality Assurance** ☐ **Health Safety & Environment** ☐ **Project Controls**		

TETRA TECH COMMENTS AND RECOMMENDATIONS

Tetra Tech Comments:

Tetra Tech Engineering Support Program (Tt ESP) has conducted a comprehensive review of the AECOM RQA/QCP. Tt ESP's Quality Assurance, Construction Management, and Project Management representatives have reviewed the document. The document dated September 3, 2019 is similar to its predecessor with a somewhat decreased scope. In general, the document is adequate and fit for purpose of the project and operating environment.

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Review Comments

Activity No. / Name: A-007

Construction Contract No. / Name: SWIM Engineering and Construction Quality Assurance Support

Submittal No. / Name: 0006_Rev0_SWIM RQA/QCP

Submittal Type (X):

Technical:

☐ **Electrical** ☐ **Mechanical** ☒ **Civil** ☐ **Architectural** ☐ **Fire Protection** ☐ **Plumbing** ☐ **Structural**

☐ **Communication** ☐ **General**

Administrative:

☒ **Quality Assurance** ☐ **Health, Safety, and Environmental** ☐ **Project Controls**

No.	Tt Submittal Reviewer Initials	Comment Review Date	Tetra Tech Review / Question / Clarifications / Comments Including USAID ☐ Other ☐ _____(Specify)	Contractor Person's Initials	Contractor Response Date	Contractor Response	Comments Status (Open / Closed)
1	MM	October 7, 2019	Independent of, and assuming the document (RQA/QCP) is adequate for the nature of work, Tt ESP has the following concerns: Tt ESP assumes that the DT Global QA/QC functions described in the plan are currently being used by DT Global to manage the four schemes in progress. Although many of the documents referenced in the RQA/QCP are not currently accessible, recent Tt ESP field observations suggests that many of the functions in the DT Global RQA/QCP are not being implemented or not implemented in accordance with the RQA/QCP.	HM GM	25 OCT 05 Dec	Acknowledged As discussed, this is a revised plan and all SWIM engineers and staff will follow the plan as outlined including appropriate reports. Once approved by USAID this Plan becomes incorporated into each contract document. Can we close this discussion on assumptions?	Open

2	MM	October 7, 2019	The DT Global plan assumes that DT Global's subcontractors can adopt and implement a fairly robust QC program. Successful implementation of the DT Global RQA/QCP is based on the subcontractor's acceptance and execution of a quality control program as defined in the RQA/QCP. Tt ESP's in-country experience suggests this is unlikely.	HM GM	25 Oct 05 Dec	SWIM doesn't assume its subcontractors will adopt the QC program as it is incorporated into their contact which each subcontractor must adhere to. Acknowledged	Open
3	MM	October 7, 2019	Based on the RQA/QCP, Tt ESP believes that DT Global QA field staffing is limited to one person. Tt ESP's assessment is that a single person will not be able to perform all the QA tasks, for each active job site across the duration of the project, as described in the DT Global plan.	HM GM	25 Oct 05 Dec	SWIM disagrees with ESP's comment and it is not ESP's mandate or position to recommend what staff SWIM assigns to a project. As discussed, SWIM will assign one QA Engineer to each canal and should additional staff be required SWIM shall add or rotate staff in as required. Acknowledged and please refer to the revised Component 1 Org chat.	Open
4	MM	October 7, 2019	The RQA/QCP does not provide for QA/QC oversight of schedules or invoices. Although not linked directly to physical construction these functions are critical to Program Management.	HM GM	25 Oct	Acknowledged	Open
5	MM	October 7, 2019	The document excludes health and safety oversight. The RQA/QCP may or may not be the appropriate document to ensure oversight of these functions. Tt ESP believes that a well-executed health and safety program is a main component to successful project completion and should be included as an oversight responsibility.	HM	25 Oct	SWIM has a separate HS Plan that provides sufficient oversight details; and each HS Plan is incorporated into each subcontract. SWIM agrees that a robust HS Plan is necessary to ensure the safety of all personnel and visitors at each site, however SWIM disagrees that it needs to be incorporated in this document.	Open

STRENGTHENING WATERSHED AND IRRIGATION MANAGEMENT (SWIM)

REHABILITATION QUALITY ASSURANCE / QUALITY CONTROL PLAN

December 2019

This publication was produced for review by the United States Agency for International Development. It was prepared by DT Global (FKA AECOM International Development), AID-306-C-17-00001

STRENGTHENING WATERSHED AND IRRIGATION MANAGEMENT (SWIM)

REHABILITATION QUALITY ASSURANCE / QUALITY CONTROL PLAN

Contract Number:	AID-306-C-17-00001
Submitted to:	USAID/Afghanistan, Office of Agriculture (electronic submission)
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Disclaimer The authors' views expressed in this document do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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Acronyms and Abbreviations

ASTM	ASTM International (American Society for Testing and Materials)
BOQ	Bill of Quantity
C1TL	Component 1 Team Leader
COR	Contracting Officer Representative
DFOW	Definable Features of Work
EMMP	Environmental Mitigation and Monitoring Plan
ESP	Engineering Support Program (USAID)
FAO	Food and Agriculture Organization of the United Nations
GIRoA	Government of Islamic Republic of Afghanistan
JICA	Japan International Cooperation Agency
M&E	Monitoring and Evaluation
MAIL	Ministry of Agriculture, Irrigation, and Livestock
MEW	Ministry of Energy and Water
NCR	Non-Conformance Report
QA	Quality Assurance
QAE	QA/QC and Environmental Compliance Engineer
QC	Quality Control
RADP	Regional Agriculture Development Program
RQAP	Rehabilitation Quality Assurance/Quality Control Plan
SI	Site Inspector
SOW	Scope of Work
SRQCP	Subcontractor Rehabilitation Quality Control Plan
SWIM	Strengthening Watershed and Irrigation Management
USAID	United States Agency for International Development
RED-LINE Drawings	Red-Line Drawings record the changes that have occurred during the rehabilitation and are incorporated onto the drawings manually and/or electronically prepared by the Subcontractor. The field Red-Line set and other miscellaneous documents will be provided by the subcontractor for the preparation of the As-Built Drawings.
AS-BUILD Drawings	As-Built Drawings are the official record drawings which document what was actually constructed

1. INTRODUCTION

USAID/Afghanistan awarded the Strengthening Watershed and Irrigation Management (SWIM) Contract no. AID-306-C-17-00001 to AECOM International Development (of DT Global). The period of performance is from December 7, 2016 to December 6, 2021. The SWIM Activity aims to provide technical services and capacity building to support the Government of Islamic Republic of Afghanistan (GIRoA), strengthen its water resource management systems, increase agricultural water productivity in coordination with USAID's Agriculture Development Programs, and support farm communities to manage water and on-farm resources. Implemented through three integrated components, SWIM's specific objectives are to:

1. Increase the sustainable and productive use of water in agriculture by rehabilitating irrigation canals and upper watersheds; (Component 1)
2. Strengthen the water regulatory framework by increasing collaboration and cooperation between provincial and national governing bodies for irrigation and water management, while initiating training programs and increasing public outreach and impact; (Component 2) and
3. Strengthen capacity of local entities to manage water resources by developing their administrative bodies and technical capacity to sustainably manage water resources and improve natural resource management. (Component 3)

Operating in six provinces, SWIM supports the Afghan Ministry of Agriculture, Irrigation, and Livestock (MAIL) and the Ministry of Energy and Water (MEW) to implement the GIRoA Water Law and the National Irrigation Plan. SWIM establishes mutually reinforcing relationships between farmers, associations, and the GIRoA to promote sustainability, and incorporates local capacity building to achieve more effective and efficient water resources planning and management.

1.1 PROJECT SETTING

SWIM's selection of irrigation schemes and watersheds for rehabilitation was performed in collaboration and coordination with MAIL staff and with USAID's Contracting Officer Representative (COR). SWIM currently has 23 irrigation schemes identified for restoration.

SWIM is responsible for the procurement, supervision, and quality control of construction, which will be performed by local construction companies with SWIM oversight.

1.2 QUALITY PROGRAM OVERVIEW

SWIM's management approach to ensure rehabilitation activity quality includes a combination of quality controls by the subcontractor and quality assurance by SWIM staff. The governing technical specifications and procedures for this *Rehabilitation Quality Control/Quality Assurance Plan* (RQAP) are derived from the "MAIL Technical Specifications for Irrigation Construction Works," produced by JICA and FAO (April 2017).

This RQAP details the systems and controls that SWIM has put in place to ensure that the quality of the project adheres to the requirements specified in the technical specifications and drawings. SWIM provides guidelines and manages the overall quality control approach to be followed by its subcontractors.

The quality of the rehabilitation activities will be ensured through an integrated system of quality assurance, directed by the Component 1 Team Leader (C1TL), as well as through the quality assurance (QA) and control provided by the subcontractors and SWIM's designated QA Engineers for each canal work site. The provincial QA Manager is responsible for the day-to-day coordination of quality assurance and quality control measures in each province,

This RQAP is a companion document to SWIM rehabilitation subcontracts and SWIM's Health and Safety and Environmental Plans. It establishes the following:

- Project procedures and general responsibilities for the quality assurance and quality control (QA/QC) program; and
- Protocols to ensure that the rehabilitation site work will be executed in accordance with the drawings and technical specifications.

The subcontractors are responsible for ensuring that rehabilitation activities are in accordance with the drawings and technical specifications, as defined in each subcontract. Each subcontractor is also responsible for verifying that its activities adhere with contract drawings, specifications, and related requirements.

The subcontractor's quality control (QC) system is composed of inspections, tests, and production controls to attain the required standards of quality and to avoid any issues of noncompliance. Each subcontractor will establish an independent QC program and write a Subcontractor Quality Control Plan (SCQCP). The SCQCP must provide for tests and inspections pursuant to various technical specifications. It will define procedures to ensure that the quality of activities is properly documented and accomplished in accordance with subcontract documents, written instructions, ASTM (American Society for Testing and Materials) standards, codes and procedures, or other industry standards accepted by MAIL and USAID. Furthermore, the SCQCP will define methods to ensure that activities which may affect project quality are implemented under controlled conditions.

Independently of the subcontractors, the C1TL will provide oversight of the QA processes through daily monitoring and scheduled inspections to verify that the subcontractor's QC program is effective and to ensure that the standards defined in the subcontract requirements are being met by the subcontractors.

The objective of this RQAP is to:

- Describe the quality assurance program and methodology that will be utilized so that the irrigation scheme or watershed is rehabilitated in accordance with the subcontract requirements and ASTM standards;
- Describe guidelines for inspection and proper documentation procedures for rehabilitation activities;
- Provide reasonable assurance that the completed work will meet or exceed the requirements of the rehabilitation drawings and specifications; and
- Describe how any unexpected changes or conditions that may affect rehabilitation quality will be detected, documented, and addressed during the implementation of the rehabilitation works.

1.3 QUALITY MANAGEMENT PLAN

SWIM will provide rehabilitation management services for all rehabilitation activities. In addition, SWIM will carry out the rehabilitation activities in accordance with this RQAP.

1.4 RQAP ORGANIZATION

This RQAP is organized into ten sections:

1. Section 1 - Introduction: Describes the project setting, and the RQAP quality program overview.
2. Section 2 - Project QA/QC Organization: Presents the organization and key personnel involved in the rehabilitation activities, their responsibilities and authorities, and the structure of the QA/QC mechanism.
3. Section 3 - Submittals: Presents the procedures for processing submittals from subcontractors and vendors.
4. Section 4 - Performance Monitoring Requirements: Addresses QA/QC measures for monitoring performance of activities.
5. Section 5 - Inspection and Verification Activities: Provides procedures for tracking rehabilitation activities and also outlines inspection and verification activities, acceptance criteria for rehabilitation work, and rehabilitation work audits.
6. Section 6 – Rehabilitation Work Deficiencies: Describes the procedures for tracking rehabilitation work deficiencies, from identification through acceptable corrective action.
7. Section 7 - Documentation: Describes the documentation procedures to be used throughout the project. Specifically, a secure document filing and storage system and a Document Tracking System.
8. Section 8 - USAID Approvals: Describes USAID approvals applicable to the RQAP.
9. Section 9 - Field Changes: Describes how to handle changes to the quality plan in order to assure QA/QC objectives are met.
10. Section 10 - Final Reporting: Describes the QA/QC documentation required for rehabilitation activities, which is to be submitted to USAID in the Rehabilitation Activity Completion Report.

2. PROJECT QA/QC ORGANIZATION

This section presents the responsibilities and authorities of organizations and key personnel involved in rehabilitation activities, the structure of the QA/QC system, the minimum required training and experience of the QA/QC personnel, and the QA/QC training given to all onsite workers.

2.1 RESPONSIBILITIES AND DELEGATION OF AUTHORITIES

The organizations involved in the rehabilitation activities and their QA/QC roles and responsibilities are as follows.

2.2 USAID

USAID is the donor agency responsible for observing and monitoring the progress of the rehabilitation activities through USAID's Engineering Support Program (ESP).

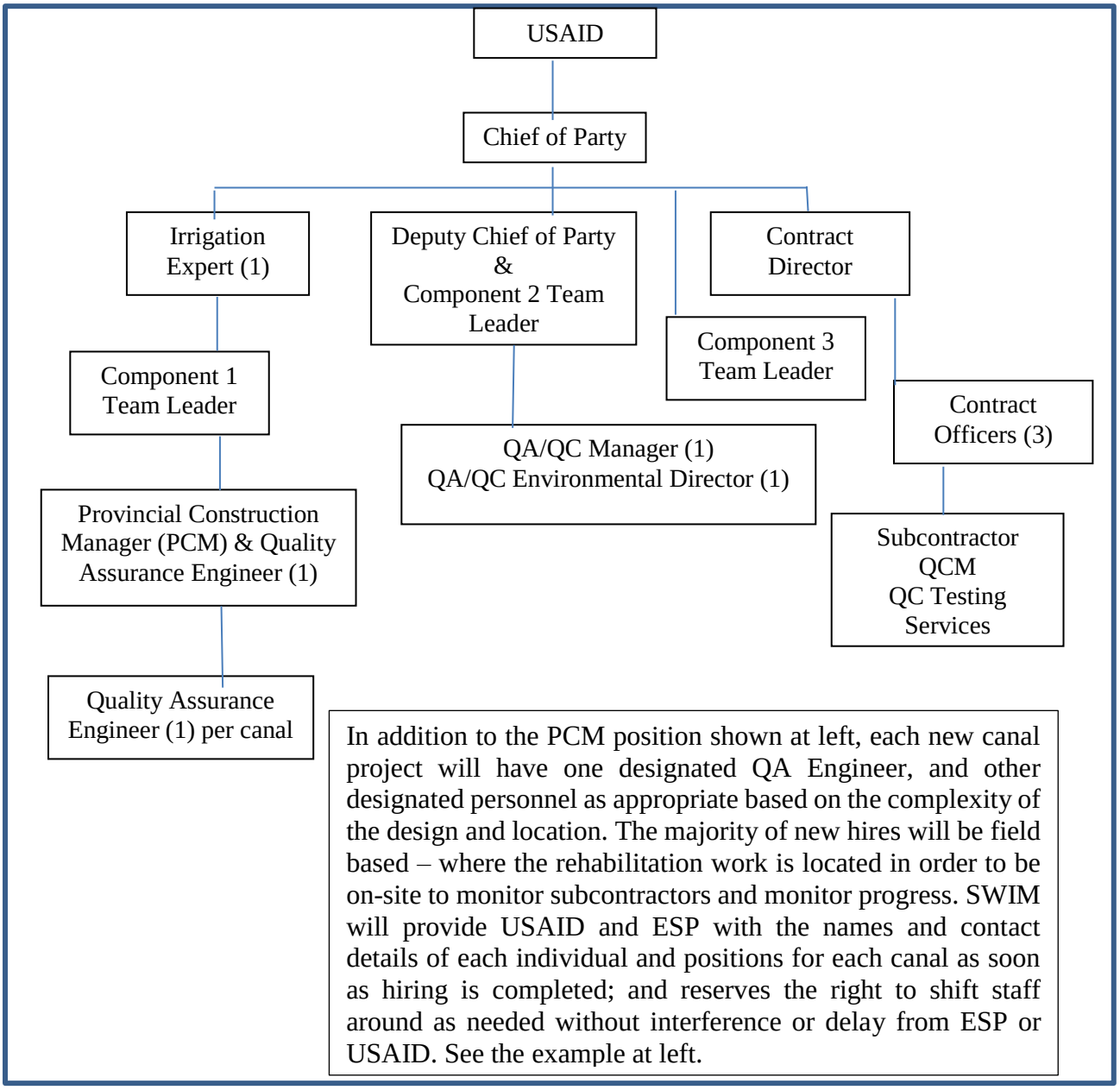
2.2.1 SWIM

The SRQCP will be implemented by SWIM Subcontractors on behalf of SWIM. The "SWIM Organizational Chart and Reporting Lines" figure below depicts the relationship between SWIM and its subcontractors. The QA/QC and Environmental Compliance Engineers (QAE) also contribute to the QA/QC plan, as they are the first line of oversight. The QA team is responsible for verifying that the subcontractor and SWIM personnel are complying with regulations, identifying issues, and

ensuring that those issues are resolved. Furthermore, the QA team is tasked with ensuring that this process is being documented correctly. The Organizational Chart depicted in Figure 1 shows the chain of command, with lines of authority represented by a solid line, and lines of communication represented by a dotted line. A full detailed list of organizational charts, job descriptions, and responsibilities for each staff member are enclosed in the RQAP Organizational Charts and Job Descriptions. SWIM subcontractors will organize their own staff accordingly.

The subcontractors shall only communicate with SWIM and communication between SWIM and ESP will be composed of written and verbal instructions. Any information regarding QA/QC shall be transmitted by referenced transmittal letter or notice. The proper format for SWIM subcontract correspondence is as defined in section 1.4, RQAP Organization Document Control. Procedures for meetings shall be established according to RQAP Organization ESP Site Meetings, which defines the frequency, participants, and reporting actions to be taken. Implementation dates and timelines shall appear in the minutes for each meeting.

Figure 1: SWIM Organizational Chart and Reporting Lines.



2.2.2 SWIM Component I (C1TL)

SWIM shall assign a QA/QC and Environmental Compliance Engineer (QAE) for each Irrigation Canal who shall provide the overall Quality Assurance and monitor the day-by-day rehabilitation QC quality control activities performed by the rehabilitation subcontractors to verify compliance with the project drawings and specifications. The QAE shall report to the Component I Team Leader (C1TL) and QA Manager and they are responsible for managing, coordinating, and administering all QA/QC activities and requirements. Additionally, the C1TL may be assigned management of any third-party QA inspection or testing firms subcontracted by SWIM.

In addition, the C1TL will manage rehabilitation subcontractors and serve as the primary point of contact with the subcontractors, including for all technical communications. The C1TL is responsible for the oversight of construction and the technical compliance of the subcontractor. The Provincial Construction Manager and QA Engineer assigned to each rehabilitation work location are also the responsibility of the C1TL. In the absence of a Provincial Construction Manager, the C1TL will act in his place.

2.2.3 QA/QC Engineers

The QA/QC Engineers will be responsible for the day to day implementation of this RQAP in the field, working jointly with subcontractor representatives.

3. SUBMITTALS

This section describes the procedures for SWIM's processing of submittals from subcontractors. After ensuring that they are complete, submittal documents shall be transmitted to the relevant project staff for review and also to verify that they comply with subcontract requirements. The state of the submittal will be noted on the document, which will then be signed, dated, and returned to the subcontractor. If required, the subcontractor will revise the submittal, incorporating the comments and will resubmit it for review and compliance verification. Submittals will be logged and copies will be retained in the project files.

3.1 SUBMITTAL REVIEWS

1. The Subcontractor will review the master submittal register periodically to ensure that all submittals required by the contract are accounted for and that they have been properly submitted and approved by SWIM, with no adverse impacts to the construction schedule. All submittals will be reviewed by SWIM to ensure compliance with contract specifications.
2. The SWIM QA/QC team will confirm that all approved submittals are kept on-site in the contractor's QC and design files in order to confirm that those materials have been delivered to the site.
3. Any material samples submitted by the Subcontractor will be reviewed by SWIM, as per the

instructions and procedures available in the technical specifications. Once a submittal is received, SWIM will review and approve the document. In the event that the submittal is not approved, it will be returned to the subcontractor for correction. Similarly, the subcontractor shall track all submittals and inform the SWIM Contract Officer of any issues or delays in submissions by the subcontractor in a timely manner

4. The document controller is responsible for tracking the submittal package during the entire review process and advising all concerned parties of any schedule issues to ensure that the review timeline is adhered to.
5. The C1TL will retain soft copies of all submittal documents and revisions, as well as ensure that an accurate file is available for ready retrieval during the life of the project. The C1TL is also responsible for keeping and updating the submittal register. These files will be cataloged numerically. Each submittal file will contain a complete copy of the entire submittal packages leading to a final decision.
6. Once the submittal is approved, the C1TL (or designated staff) will issue an email to the Subcontractor with the Field Office copied, informing them about the approval.

4. ENVIRONMENTAL COMPLIANCE

The environmental compliance requirements that are applicable to rehabilitation activities are described in the Environmental Mitigation and Management Plan (EMMP). The EMMP requires that subcontractors maintain specific plans to demonstrate that they are in compliance with environmental requirements and that they are conducting appropriate monitoring of related work areas. The C1TL will perform oversight of subcontractor compliance and related work-area monitoring in accordance with the approved EMMP. The QA Engineers will also ensure compliance with the EMMP.

4.1 PERFORMANCE STANDARDS

Rehabilitation activities will be performed in accordance with the EMMP, which addresses the identified potential environmental impacts. The EMMP includes mitigation measures that enable subcontractors to meet these environmental requirements. Please refer to the EMMP for more detail on these requirements, the underlying standards, and the monitoring activities that will be performed to verify compliance.

4.2 PREVENTION

During rehabilitation activities, subcontractors will comply with the pollution prevention and monitoring requirements established by the EMMP.

4.3 REPORTING

Monitoring data obtained by the C1TL during the rehabilitation work will be included in the monthly progress report.

5. INSPECTION AND VERIFICATION ACTIVITIES

The subcontractor shall create plans that ensure quality control, verification, and acceptance for each technical specification applicable to the subcontractor's scope of work (SOW). The plans will cover the type, test standard, frequency, control requirements, and assigned responsibilities for the inspections and tests. The C1TL will review and approve these plans as part of the SRQCP submittals.

After being approved by the C1TL, the SRQCPs are available upon request for informational purposes only.

Ongoing QA monitoring and oversight of subcontractor QC inspections and testing will be performed by SWIM's Site Inspectors, with additional oversight provided by the QA/QC and Environmental Compliance Department. In this manner, the inspections and tests required to ensure adherence to the technical drawings and specifications are established and performed.

5.1 GENERAL REHABILITATION WORKS INSPECTION AND VERIFICATION REQUIREMENTS

Subcontractors shall perform the inspections and tests as prescribed in the technical specifications for rehabilitation activities, including proper material handling and storage as indicated in the SWIM Health and Safety Plan (Section 18). Furthermore, these tests and inspections shall be conducted in accordance with subcontract documents, written instructions, ASTM standards, codes/procedures, or other industry standards accepted by MAIL and USAID.

Example: Inspection and Testing Plan

Material quality testing will be done prior to rehabilitation works in order to verify that the materials comply with specifications. The Subcontractor will obtain representative samples from the proposed material source and send these samples to the testing laboratory. The testing laboratory will report all test results to determine whether the materials meets the required criteria. For soils, sampling and analysis will be performed by the Subcontractor onsite. Joint inspection of the sample collection may be required.

The C1TL or designee will periodically inspect materials being delivered and used. If it is determined that the characteristics of the material being delivered or used are different from the material initially tested, the C1TL designees will direct the Subcontractor to repeat the qualification testing. If the new test results meet the criteria of the technical specifications, the new materials may be used for the work. If not, the identified material must be removed from the site and replaced. Inspection and testing is summarized in Table 1 below.

Table 1 – Typical Control, Verification, and Acceptance Testing Plan in the Field

Specifications		Quality Control		Responsibility		Control Requirements
Item	Item Description	Test Type	Test Standard	Subcontractor (QC)	SWIM (QA)	
1	Backfilling Compaction and Density Control	FDT - 95% of Max dry density	Method of ASTM D 1556 or ASTM D2922	Subcontractor's testing laboratory	7% - 10% verification test	N/A
2	Trenching, Backfilling, and Compacting	FDT 95% of Max dry density	ASTM D698	Subcontractor's testing laboratory	7% - 10% verification test	N/A
3	Slump Test	1 per batch plan and concrete cast	ASTM C143	Subcontractor's testing laboratory	7% - 10% verification test	N/A

4	Cement Test in the Field	Each truck	Date of Manufacturing, Cement Color, Smoothness Test	Subcontractor's QC Engineer and SWIM QA Engineer, or Site Inspector	5% verification test	Water Sinking Test, Temperature Inside Cement Bag. More methods can applied.

Table 2 – Typical Control, Verification and Acceptance Testing Plan in the Laboratory

Specifications		Quality Control		Responsibility		Control Requirements
Item	**Item Description**	**Test Type**	**Test Standard**	**Subcontractor (QC)**	**SWIM (QA)**	
1	Select Fill / Non-expansive soils	Satisfactory material with plasticity index equal to or less than 12	ASTM D 4318	Subcontractor's testing laboratory	One Test per source or supplier or Type plus 7% - 10% verification test	N/A
2	Coarse aggregate (Grain-size Distribution)	1 per stockpile and source change	ASTM D 422 or C136, size No. 6	Subcontractor's testing laboratory	One Test per source or supplier or Type plus 7% - 10% verification test	N/A
3	Fine Aggregate (Grain-Size Distribution)	1 per stockpile and source change	ASTM C136; C33, size no. 56 or 67	Subcontractor's testing laboratory	One Test per source or supplier or Type plus 7% - 10% verification test	N/A

4	Cement	1 per brand	ASTM C 150	Subcontractor's testing laboratory	One Test per source or supplier or Type plus 7% - 10% verification test	
5	Water	1 per Source PH and Chemical analysis	ASTM D1067 – 16, ASTM D4638 - 16	Subcontractor's testing laboratory	One Test per source or supplier or Type plus 7% - 10% verification test	
6	Steel bar	1 per source	ASTM A 615	Subcontractor's testing laboratory	One Test per source or supplier or Type plus 7% - 10% verification test	

5.1.1 Inspections

The subcontractor shall establish a program for inspecting any activity that may affect the quality of work. These inspections shall cover all construction sites and laboratory operations, including both onsite and offsite operations. Inspections shall be performed to verify compliance with documented instructions, drawings, procedures, and specifications as required by the subcontract. All inspections shall be documented by the subcontractor.

A four-phase inspection program shall be followed for each definable feature of the work (DFOW). The definable features list for each rehabilitation activity includes timelines, frequencies, and unique specific items of QA work (outlined in the BoQ). This list will be submitted to SWIM during the subcontractor approval process.

The four phases of inspection are:

1. **Preparatory Inspection**

The subcontractor and the C1TL (or their designees) shall perform joint preparatory inspections prior to beginning any work on any definable feature of the work. During this phase, the inspectors will:

- Ensure that preparatory inspections include a review of contract requirements;
- Ensure that at the work sites, copies of the following documents are made available: drawings issued for construction, technical specifications, RQAP, SRQCP, H&S plan, EMMP Plan, work schedule, and site book;
- Ensure that all materials and/or equipment have been tested, submitted, and approved;
- Ensure that required testing has been conducted;
- Examine work area to ascertain that all preliminary work has been completed;
- Confirm that all monitoring and measuring equipment is properly calibrated and in proper working condition;
- Ensure that the approved H&S plan is implemented;
- Ensure that the EMMP mitigation measures are implemented; and
- Record preparatory inspections in the subcontractor's QC documentation.

2. **Initial Inspection**

The Subcontractor and the C1TL (or designees) shall perform an initial inspection as soon as a representative portion of the particular feature of work has been completed. This phase of inspection will:

- Examine the quality of workmanship;
- Review control testing for compliance with subcontract requirements;
- Review dimensional aspects of the work; and
- Record initial inspections in the subcontractor's QC log and retain a copy.

3. Follow-Up Inspection

The subcontractor and the QAE or C1TL (or designees) perform follow-up inspections daily. These inspections ensure:

- Continuing compliance with subcontract requirements;
- Continuing compliance with control testing until the completion of a particular feature of work;
- Subcontractor QC Manager records follow each inspection in daily QC reports;
- The SWIM QA/QC and Environmental Compliance inspection staff records follow-up inspections in their daily inspection report;
- A final follow-up inspection shall be conducted, and any deficiencies are corrected prior to the addition of new definable features of work; and
- Relevant definable features of work in rehabilitation activities include earth works, concrete works, and masonry works. For each individual project, a list of DFOWs will be prepared and shall include, but is not limited to, all items of work on the BOQs.

4. Completion Inspection

The subcontractor and SWIM's QA/QC and Environmental Compliance inspection staff perform a completion inspection of the work. This inspection shall:

- Develop a "punch list" of any items that do not conform to the approved drawings and specifications;
- Include the punch list in the rehabilitation QC documentation, including the estimated date by which the deficiencies will be corrected; and
- Perform a second completion inspection after punch list items have been completed by the Subcontractor, conducted through a joint inspection process.

The daily inspection reports shall list inspections conducted, the results of those inspections, the location and nature of defects found, causes for rejection, and remedial or corrective action taken or proposed.

Additional SWIM QA inspections may include the inspection of subcontractor lab testing facilities, fabrication facilities, and suppliers. Other inspections outside of the four-phase program described above will be ordered or performed by the SWIM C1TL. These inspections shall be performed and conducted at various points during the rehabilitation work that would typically require inspection of specification compliance.

When deficiencies are discovered during the four-phase process or during other inspections, a focused inspection shall be considered by the C1Tl. When material, performed work, or installation is found to be deficient based on focus inspections or does not meet the project specifications, the C1TL will ensure that the deficiency is corrected, as discussed in Section 6.

5.1.2 QC Testing

The testing of materials is a reliable QA/QC tool to verify the quality of different construction

materials. Most construction materials are required to pass specific tests in order to comply with contract specifications. Testing requirements are listed in this QC plan.

5.2 REHABILITATION WORK ACCEPTANCE CRITERIA

The criteria for acceptable material inspection and testing results are established by technical specifications, as illustrated in the example QC tables included in Annexes A (materials qualifications), B (inspection), and C (testing). Criteria for materials and equipment have been set by SWIM in accordance with the applicable codes and standards. Subcontractor submittals are to document conformance with acceptable criteria as detailed in their SRQAP (Control, Verification, and Acceptance Testing Plan).

5.3 REHABILITATION WORKS AUDITS

The QAE assigned to a specific rehabilitation site will inspect and verify that the subcontractor is documenting quality correctly and that it is in compliance with the subcontractor's SRQCP.

The Subcontractor's auditing shall be planned, performed, and documented in accordance with written instructions, procedures, or checks included in the RQCP. The audit scope, frequency and methods shall be defined in the RQCP. Audits shall be performed by qualified and properly trained personnel who are familiar with the QC system, auditing procedures, and techniques. Selection of auditors and the conduct of audits shall ensure the objectivity and impartiality of the audit process. Auditors shall not audit their own work. The auditing system shall cover all activities which may affect the quality of rehabilitation work, as well as laboratories. In addition, audits may also apply to onsite and offsite locations, including all subcontractors/vendors. The results of the audits shall be documented and reported to the SWIM C1TL. All non-conformance conditions identified during the audit shall be re-audited to verify the corrective actions taken by the appropriate organization were effective.

5.4 COMPLIANCE WITH HANDLING, STORAGE, PRESERVATION, AND DELIVERY REQUIREMENTS

SWIM QA/QC field staff will inspect the rehabilitation subcontractor's activities to ensure technical compliance in identification, handling, storage, packaging, preservation, delivery of materials, parts, assemblies, and end products. Related quality records and documents will be maintained in accordance with the procedures provided in Section 7 of this RQAP.

6. REHABILITATION WORK DEFICIENCIES

This section provides procedures for tracking rehabilitation work deficiencies (non-compliance) from identification through acceptable corrective action. It defines the controls and related responsibilities and authorities for dealing with noncompliant products or services.

6.1 NON-CONFORMANCE REPORT (NCR)

The Non-Conformance Report (NCR) is a formal notification to the subcontractor that work does not meet the drawings or the specifications for the project or any document that has been approved as part of the subcontract conditions, such as the EMMP or RQCP. Any item of work found to be deficient (out of conformance with the rehabilitation drawings or specifications) will be identified by the Site Inspector or QA Engineer on the non-conformance report, as described in this section. Non-

conformance reports will be included in the non-conformance log and tracked to verify that the non-conformance has been corrected.

7. DOCUMENTATION

Subcontractor's QC documentation must cover all aspects of QC program activities and include Daily Inspection Reports and Test Reports. After SRQCP approval by the C1TL, the Subcontractor will document the QC activities pursuant to the RQCP. Ongoing SWIM QA oversight will be documented by the SWIM C1TL.

Beyond the data reporting required in Section 4.3 of this document, SWIM proposes that the results of SWIM QA/QC procedures not be included regularly in the monthly progress reports.

7.1 DAILY REHABILITATION WORK REPORT

A daily rehabilitation work report will be prepared by and signed by the SWIM Site Inspector. The report will include a summary of the subcontractor's daily rehabilitation activities. Supporting inspection data sheets will be attached to the daily report where needed. Example forms are provided in Annex D.

At a minimum, the daily rehabilitation work report will include the following information:

- Date, project name, location, and other identifying information;
- Description of weather conditions, including temperature, cloud cover, and precipitation;
- Reports on any meetings held and their results;
- Record of visitors to site;
- Locations of rehabilitation works underway during that day;
- Equipment and personnel working in each activity, including other subcontractors;
- Descriptions of work being inspected and pass/fail results;
- Decisions made regarding approval of units of material or work, and corrective actions to be taken if need-be;
- Description of problems or delays and how they have been resolved;
- Communications with subcontractor staff;
- Rehabilitation activities completed and/or in progress;
- Photographs of progress, inspections with results, and deviations when applicable; and
- Signature of the report by the Site Inspector.

As described in Section 7.6, the Daily Rehabilitation Work Reports will be routed on a daily basis to the project QC/QA files and will be maintained as part of the permanent project record. These reports are reviewed by the CITL, as well as distributed to the Monitoring and Evaluation (M&E) Manager.

7.2 INSPECTION AND TESTING REPORT FORMS

Report forms will be completed for inspections and tests conducted. The forms vary depending on the inspection or test type. Appropriate forms for several types of inspections and testing reports are included in Appendix D. These forms include:

- Description or title of the inspection activity;
- Location of the inspection activity or location from which the sample was obtained;
- Recorded observation or test data;
- Results of the inspection activity;

- Personnel involved in the inspection activity; and
- Signature of the inspector.

7.2.1 Responsibilities

SWIM Staff, working with the Subcontractor, will be responsible for assuring that red-line record drawings are maintained daily throughout the rehabilitation process. These red-line record drawings will be used to update the design drawings to "as-built" status at the completion of the work. Any change in the record drawings should be requested in writing to the SWIM Designs Director, who will approve or reject the requested modification, also in writing. If it is approved, the red-line drawing should be issued and kept at the site work.

7.2.2 Preparation of As-Built Drawings

The Subcontractor, with input from the QAE, will be responsible for updating red-lining construction drawings in the field in preparation for as-built drawings. The original design drawings will be marked up by the Subcontractor as the project progresses to indicate as-built conditions. Where there was a change to a specified material, dimension, location, or other feature, the as-built drawing will indicate the work performed.

7.2.3 Review of As-Built Drawings

Upon the completion of the red-line drawings, the Subcontractor will submit the red-line mark-up drawings to the C1TL for review as the completed as-built drawings. The C1TL will provide the mark-ups to the SWIM Design Team, who will verify the mark-up drawing by cross referencing it with the red-line drawings from the Site Inspector. After approving the final as-built drawings, copies will be submitted to USAID and the Line Minister.

7.3 CONTROL OF QUALITY RECORDS

The C1TL verifies QA record accuracy and maintains copies of all quality-related documentation. This includes, but may not be limited to:

- Daily rehabilitation work QA logs and records;
- Inspection checklists and reports;
- Non-conformance reports;
- Material receiving reports; and
- Monitoring and test data.

These records will be stored in files maintained in the project document control files.

The C1TL has primary responsibility for the centralized document control files for the project and rehabilitation works documentation.

7.4 REQUIRED SUBMITTALS

Submittals required for USAID approval that are applicable to QA/QC are of this RQAP. USAID approval is not required for subcontractor submittals.

7.4.1 RQAP

SWIM will submit this revised RQAP for USAID approval prior to commencement of new rehabilitation activities for SWIM Project Year 3 and Year 4. The C1TL is responsible for maintaining this RQAP. Revisions to the RQAP will be approved in the same manner as the original.

7.4.2 Rehabilitation Work Completion Report

SWIM will include QA/QC related documents for rehabilitation activities with the Rehabilitation Work Completion Report. The documents to be included in the Rehabilitation Work Completion Report are further described in Section 10.

7.5 USAID APPROVAL

USAID may respond to any plan, report, or other item that requires its approval, following a review, in order to:

- Approve the submission, in whole or in part;
- Approve the submission with specified conditions;
- Modify the submission to cure deficiencies;
- Disapprove the submission; or
- Any combination of these provided that any such modification or direction would not materially expand the SOW.

USAID will not modify a submission without providing at least one notice of deficiency with 14 days to correct the deficiency. Following the correction process, the plan, report, or other item will be resubmitted for approval.

8. FIELD CHANGES

Field changes for QA/QC shall be limited to this RQAP. Changes to rehabilitation processes or design drawings and specifications are governed by the design change order procedures.

8.1 RQAP CHANGES

USAID or SWIM may initiate revisions to this RQAP. The RQAP may be revised if and when it becomes apparent that the RQAP procedures or controls are inadequate to support work that conforms with the specified quality requirements or are deemed to be more excessive than required to support work that conforms with the requirements. Changes to QA procedures necessitating modification to this RQAP will be initiated by the SWIM C1TL for USAID approval.

USAID review and approval will then be accomplished as described in Section 8: USAID Approvals. Updates to RQAP staffing will be made by SWIM notifying USAID, as described in Section 2.3, without submission of a fully revised RQAP.

9. FINAL REPORTING

The following quality related documents will be generated during rehabilitation works and will be submitted to USAID as part of the Rehabilitation Work Completion Report:

- Record (as-built) Drawings
- Operation and Maintenance Manuals

ANNEX A: QUALIFICATION TEST SCHEDULES

Onsite Borrow Materials

Test Parameter	Test Method	Minimum QC Testing Frequency by Subcontractor	Acceptance Criteria (verified by QA)
Soil Classification	ASTM D2487	1 per 100 cubic meter and source change	In accordance with MAIL Technical Specification Part 2
Atterberg Limits	ASTM D4318	1 per 100 cubic meter and source change	In accordance with MAIL Technical Specification Part 2
Grain- Size Distribution	ASTM D422 or C136	1 per 100 cubic meter and source change	In accordance with MAIL Technical Specification Part 2
Moisture Content	ASTM D2216/ D2974	1 per 100 cubic meter and source change	In accordance with MAIL Technical Specification Part 2

Notes:

1. Borrow soil must be from approved on-site borrow source with test results provided According Technical Specification. Any change in material must be consistent with approved material characteristics as determined by the C1TL. New moisture content curves will need to be plotted for change in material.
2. Note: This table is for illustration only and is not intended to replace or modify contract specifications that will form the basis of actual RQCP submittals by subcontractors

Aggregate Materials

Test Parameter	Test Method	Minimum QC Testing Frequency by Subcontractor	Acceptance Criteria (verified by QA)
Coarse Aggregate			
Grain-Size Distribution	ASTM D422 or C136	1 per stockpile and source change	In accordance with MAIL Technical Specification Part 3
Moisture Content	ASTM D2974	1 per stockpile and source change	In accordance with MAIL Technical Specification Part 3
Compaction Characteristics	ASTM D1557	1 per stockpile and source change	In accordance with MAIL Technical Specification Part 3
Fine Aggregate			
Grain-Size Distribution	ASTM D422 or C136	1 per stockpile and source change	In accordance with MAIL Technical Specification Part 3
Moisture Content	ASTM D2974	1 per stockpile and source change	In accordance with MAIL Technical Specification Part 3
Compaction Characteristics	ASTM D1557	1 per stockpile and source change	In accordance with MAIL Technical Specification Part 3

Note: This table is for illustration only and is not intended to replace or modify contract specifications that will form the basis of actual RQCP submittals by subcontractors.

Cementitious Materials

Test Parameter	Test Method	Minimum QC Testing Frequency by Subcontractor	Acceptance Criteria (verified by QA)
Portland Cement			
Chemical & Physical Requirements	ASTM C150	Prior to use in concrete mix in absence of material certification	In accordance with MAIL Technical Specification Part 3
Fluidized Bed Ash			
Chemical & Physical Requirements	ASTM C311	Prior to use in concrete mix in absence of material certification	In accordance with MAIL Technical Specification Part 3

Note: This table is for illustration only and is not intended to replace or modify contract specifications that will form the basis of actual CQCP submittals by contractors.

Stone Aggregate Materials

Test Parameter	Test Method	Minimum QC Testing Frequency by Subcontractor	Acceptance Criteria (verified by QA)
Sieve Analysis	ASTM C136; C33	Prior to use in concrete mix and whenever character or source is changed	Max coarse aggregate size of No. 57 or 67 gradation per ASTM C33. Fine aggregate shall pass No. 4 sieve, gradation to conform with ASTM C33
Organic Impurities	ASTM C40	Prior to use in concrete mix and whenever character or source is changed	Fine aggregate not darker than reference standard color per ASTM C40. Sand exhibiting a color darker than the referenced color shall be rejected.
Soundness	ASTM C33	Prior to use in concrete mix and whenever character or source is changed	Loss resulting after 5 cycles not to exceed 8% for coarse aggregate or 10% for fine aggregate when using sodium sulfate solution or 11% for coarse aggregate or 14% for fine aggregate when using magnesium sulfate per ASTM C33
Abrasion	ASTM C131	Prior to use in concrete mix and whenever character or source is changed	Loss not to exceed 10.5% after 100 revolutions, 42% after 500 revolutions
Deleterious Materials	ASTM C33	Prior to use in concrete mix and whenever character or source is changed	In accordance with tables in ASTM C33
Material Finer Than 200 Sieve	ASTM C117	Prior to use in concrete mix and whenever character or source is changed	Not to exceed 1% for gravel or 1.5% for crushed aggregate per ASTM C33
Alkali Reactivity	ASTM C227	Prior to use in concrete mix and whenever character or source is changed	Aggregates considered innocuous in accordance with ASTM C289
Cleanliness and Sand Equivalent	NYSDOT Specification 703.02	Prior to use in concrete mix and whenever character or source is changed	Quality not less than 75 for average of three identical samples nor less than 70 for an individual sample

Note: This table is for illustration only and is not intended to replace or modify contract specifications that will form the basis of actual CQCP submittals by contractors.

Concrete Mix

Test Parameter	Test Method	Minimum QC Testing Frequency by Contractor	Acceptance Criteria (verified by QA)
Compressive Strength	ASTM C39	Preliminary testing of mix design; test at 28 days	Min 5000 PSI Min 4000 PSI Min 3000 PSI Min 2500 PSI
Water/Cement Ratio	ASTM C780	Preliminary testing of mix design	Limit to 0.35, 0.45,0.58 and max by weight
Slump Test	ASTM C143	1 per batch prior to pouring concrete	All concrete not containing a high range water-reducing admixture (super plasticizer) shall conform to these Max. slump values: Reinforced concrete- general 4", Non-reinforced concrete 3", Slab on grade 3"

Notes:

1. Preliminary testing of the mix design will be performed by Rehabilitation Subcontractor's Independent Testing Laboratory (Third Party lab services).
2. This table is for illustration only and is not intended to replace or modify contract specifications that will form the basis of actual RQCP submittals by contractors

ANNEX B: INSPECTION SCHEDULES

Onsite Borrow Materials Placement

Inspection Parameter	Minimum QC Inspection Frequency by Subcontractor	Acceptance Criteria (verified by QA)
Soil Texture and Color	Continuous	Similar to approved material
Presence of Foreign Objects and Materials	Continuous	Free of visible contamination, organic material, rubbish, debris, and other unsatisfactory materials
Maximum Clod Size	Continuous	No fragments larger than 3-inch that will not breakdown under hand compression.
Equipment Size and Type	Daily	In accordance with approved Work Plan
Method of Placement	Daily	In accordance with approved Work Plan
Lift Thickness for Earthen Berm	1 per lift	First lift 12-inch max. loose, subsequent lifts 8-inch max. loose, final lift 4-inch max loose, hand placed lifts 3-inch max. loose
Lift Thickness for all other applications	1 per lift	Max. 8-inch loose per lift

Note: This table is for illustration only and is not intended to replace or modify contract specifications that will form the basis of actual RQCP submittals by contractors.

Aggregate Placement

Inspection Parameter	Minimum QC Inspection Frequency by Subcontractor	Acceptance Criteria (verified by QA)
Coarse Aggregate		
Material Characteristic	Continuous	May include up to 50% of reclaimed materials
Maximum Size	Continuous	1 ½-inch
Equipment Size and Type	Daily	In accordance with approved Work Plan
Method of Placement	Daily	In accordance with approved Work Plan
Lift Thickness	1 per lift	8-inch loose per lift
Fine Aggregate		
Material Characteristic	Continuous	May include up to 50% of reclaimed materials
Maximum Size	Continuous	¾-inch
Equipment Size and Type	Daily	In accordance with approved Work Plan
Method of Aggregate Placement	Daily	In accordance with approved Work Plan
Lift Thickness	1 per lift	Min. 8-inch loose per lift

Note: This table is for illustration only and is not intended to replace or modify contract specifications that will form the basis of actual RQCP submittals by contractors.

Reinforcing, Formwork, and Cast-in-Place Concrete

Inspection Parameter	Minimum QC Inspection Frequency by Subcontractor	Acceptance Criteria (verified by QA)
Reinforcing Material Condition	Upon receipt at Site	No visible defects or damage, no unscheduled kinks or bends
Reinforcing Bundle Identification	Upon receipt at Site	Bundled and tagged
Reinforcing Material Storage	Daily	In accordance with Manufacturer's recommendations & approved Work Plan
In-Place Reinforcing	Prior to closing forms and continuous during pouring	In accordance with approved Work Plan, free of old mortar, oils, mill scale and other encrustations or coatings
In-Place Formwork	Prior to pouring of concrete	In accordance with approved Work Plan; no excess water, hardened concrete, debris or foreign materials inside of forms, wet wood forms sufficiently to tighten up cracks
Subgrade Preparation	Prior to pouring of concrete	Fine grade earth and aggregate smooth and level
Concrete Placement	Continuous during pouring of concrete	In accordance with approved Work Plan, height of concrete drop not to exceed 5 feet, place and compact within 60 minutes after water is first added, do not place after evidence of initial set
Equipment Size and Type	Continuous during pouring of concrete	In accordance with approved Work Plan
Concrete Lift Thickness	Continuous during pouring of concrete	Max. 18 inches per lift in continuous approximately horizontal layers
Maximum Deviation	Continuous during compaction of concrete	1/4-inch from 10-foot straightedge for exposed finishes, no low spots to impound water
Formed Concrete Curing	Daily during curing of concrete	Forms maintained in wet condition until removed, concrete continuously moist for min. of 7 days after pouring
Formed Concrete Finishing	After finishing of concrete	Fill holes and patch surfaces in accordance with Section 03301
Slabs and Flatwork Curing	Daily during curing of concrete	Concrete continuously wet for entire curing period

Note: This table is for illustration only and is not intended to replace or modify contract specifications that will form the basis of actual RQCP submittals by contractors.

ANNEX C: TEST SCHEDULES

Aggregate Material Placement

Test Parameter	Test Method	Minimum QC Testing Frequency by Subcontractor	Acceptance Criteria (verified by QA)
Coarse Aggregate			
Compaction	ASTM D1557	1 per compacted lift	95% max. dry density in accordance with ASTM D1557
In-Place Density	ASTM D2922	1 per compacted lift	In accordance with ASTM D2922
In-Place Moisture Content	ASTM D3017	1 per compacted lift	+/- 1% of optimum moisture content in accordance with ASTM D3017
Fine Aggregate			
Compaction	ASTM D1557	1 per compacted lift	95% max. dry density in accordance with ASTM D1557
In-Place Density	ASTM D2922	1 per compacted lift	In accordance with ASTM D2922
In-Place Moisture Content	ASTM D3017	1 per compacted lift	+/- 1% of optimum moisture content in accordance with ASTM D3017/ D2974

Note: This table is for illustration only and is not intended to replace or modify contract specifications that will form the basis of actual RQCP submittals by contractors.

ANNEX D: TYPICAL REHABILITATION WORKS FORMS

The following typical forms are included in this appendix:

1. Daily Rehabilitation Report
2. Quality Inspection Report
3. Field Inspection Checklist – Earthwork
4. Daily Concrete Inspection Report
5. Field Inspection Checklist – Placing, Consolidation, Finishing, Curing, and Repair of Concrete
6. Field Inspection Checklist – Pre-Cast and Cast-in-Place Concrete Piles
7. Inspection Notification Form
8. Non-conformance Report
9. Non-conformance Report Log
10. Contractor Non-Conformance Letter (Sample)

DAILY REHABILITATION REPORT	**REPORT NO.**	**DATE:**
JOB NAME:	**Page of**	
JOB LOCATION:		
LOCATION OF CONSTRUCTION UNDERWAY:		
SUBCONTRACTOR:	**WEATHER CONDITION:** **AM / PM** **Hi C / Lo C PRECIPITATION: INCH(S)**	
SUBCONTRACTOR'S ENGINEER:	**GROUND CONDITIONS:**	
OTHER SUBCONTRACTORS (*):	**TIMES: START** 00:00AM	**STOP** 00:00 PM

NAME / COMPANY	**CLASSIFICATION**	**HOURS**

EQUIPMENT	**TIMES: START** 00:00AM	**STOP** 00:00 PM

MEETING:

WORK BEING INSPECTED:

PROBLEM/DELAYS/CORRECTIVE ACTION TO BE TAKEN:

WORK PERFORMED

Work started at 00:00 am.
REHABILITATION ACTIVITIES COMPLETED AND /OR IN PROGRESS:

Quality Inspection Report	Job Number	Project	Page of **1/1**

CONTRACTOR:_____ REPORT NUMBER: _____

TYPE OF INSPECTION: Preparatory Inspection. Initial Inspection. Follow-up Inspection. Completion Inspection.

DESCRIPTION/INTENT OF INSPECTION: _____

_____

_____

COMPONENTS/MATERIALS REVIEWED: _____

_____

_____

CONTRACTOR PERSONNEL CONTACTED: _____

_____

_____

APPLICABLE CONTRACTOR PROCEDURES, CHECK LISTS, INSTRUCTIONS: _____

_____

_____

RESULTS OF INSPECTION: _____

_____

_____

_____

DEFICIENCIES NOTED: _____

_____

_____

RECOMMENDED CORRECTIVE ACTION: _____

_____

_____

NON-CONFORMANCES: _____

_____

_____

QA Engineer Signature: Date:

a

Field Inspection Checklist **Earthwork**	Job Number	Project	Page of **1/2**

SUBCONTRACTOR:_____ SUBCONTRACT NO: _____

REFERENCES (DRAWING, SPECIFICATION, PROCEDURE): _____

	ATTRIBUTE	**YES**	**NO**	**N/A**
A	GENERAL			
1.	Is area released for work?			
2.	Is equipment adequate?			
3.	Are existing structures and utilities adequately protected?			
4.	Is removed material properly dispositioned?			
5.	Dust and dirt control:			
	a) Haul routes maintained for dust control – by water or chemicals?			
	b) All paved areas kept clean?			
B	EXCAVATION OF TRENCHING			
1.	Does completed depth and configuration comply with drawings and specifications?			
2.	Required shoring and bracing in place?			
3.	Existing utilities protected?			
C	PLACING AND COMPACTING FILL			
1.	Excavation properly compacted and verified by test lab?			
2.	a) Approved fill material is used?			
3.	Is fill being placed in level lifts within thickness limits? Is proper compaction attained and verified by test lab?			
4.	Have contaminated (and spongy) areas been cut out, filled and compacted with approved material?			
D	BEDDING AND BACKFILL OF PIPE AND UTILITY TRENCHES			
1.	Approved bedding and backfill material is used?			
	a) Is bedding fully compacted, grade, and slope required and verified by inspector?			
E	GRADING			
1.	Approved grading material used?			
	a) Final shaping/compacting and blade and 3-wheel rollers of 8-10 ton?			
2.	Sufficient slope for positive drainage away from structures to drainage system?			

Field Inspection Checklist **Earthwork**	Job Number	Project	Page of **2/2**

SUBCONTRACTOR:_____ SUBCONTRACT NO: _____

REFERENCES (DRAWING, SPECIFICATION, PROCEDURE): _____

	ATTRIBUTE	**YES**	**NO**	**N/A**
3.	Is rough grading reasonably even and free of irregularity and allowance made for finish grading?			
4.	Is finished grade:			
	a) Cleaned of all loose and foreign material?			
	b) Smooth and even in profile (= 1" in 10') and not more than 1" from true elevation?			

REMARKS: _____

QC SIGNATURE: DATE:

Daily Concrete Inspection Report	Job Number	Project	Page of 1/1

SUBCONTRACTOR:_____

SPECIFIC LOCATION: _____LIFT NO: _____

STATION:_____TO STATION:_____OFFSET: _____

T/OFFS:_____ELEVATION:_____TO ELEV: CONCRETE TYPE:_____

_____ MIX NO:_____ADDITIVES:_____TYPE OF DELIVERY: _____

_____DELIVERY EQUIPMENT

IDENTIFICATION/NUMBER:_____PLACEMENT STARTED:

DATE_____TIME_____SHIFT ____ PLACEMENT

COMPLETED: DATE_____TIME_____SHIFT ____ WEATHER

CONDITIONS: _____

TOTAL CONCRETE PLACED: _____

TOTAL CONCRETE WASTED:_____REASON: _____ BATCH NOs: _____

_____ AVERAGE SLUMP:

_____TEMPERATURE:_____ % AIR CONTENT: _____

TEST CYLINDERS PREPARED:_____TRUCK IDENT:_____

_____ TOTAL CYLINDERS:_____ CYL IDENT: TYPE CONVEYANCE USED:

_____SURFACE CONDITION

PRIOR TO PLACING:_____MAXIMUM FREE FALL OF CONCRETE:___

_____ PROPER CONSOLIDATION: AMOUNT VIBRATORS:_____

_____ VIBRATORS IDENT/RPM: _____

DISCHARGE POINTS: NUMBER_____LOCATION_____REINFORCING

DISTURBED/REPLACED/REPAIRED:_____TYPE FINISH SPECIFIED: _____

_____FINISHING STARTED:

DATE_____ TIME_____SHIFT FINISHING COMPLETED: DATE_

_____ TIME_____SHIFT CONDITION OF FINISH: _

_____TYPE OF CURING: ____

_____DELAYS (INDICATE TYPE

AND REASON: PERSONNEL, EQUIPMENT OR PLANNING): _____

_____

_____

_____

OBSERVATIONS/REMARKS: _____

_____

_____

_____

CONCRETE INSPECTOR: DATE:

Concrete Pre-Placement Inspection	Job Number	Project	Page of **1/1**

Name of Work:		Date:	
Location:		Drawing No.:	
Subcontractor:		Total Quantity:	

No.	**Check List**	**Requirement**	**Yes**	**No**	**N/A**
1	Centre Line	As per drawing			
2	Formwork	As per drawing & in exact plum			
3	Steel reinforcement diameter/spacing	As per drawing			
4	Cover to the reinforcement and overlap	As per drawing			
5	Shuttering	Aligned as per drawing and in plumb			
6	Reference Levels	As per drawing			
7	Location of construction joints	As per drawing			
8	Quality of Water	Clean			
9	Quality of Cement	As per specification			
10	Quality of aggregate	As per specification			
11	Quality of sand	As per specification			

Concrete Placement Inspection	Job Number	Project	Page of **1/1**

Name of Work:		Date:	
Location:		Drawing No.:	
Subcontractor:		Total Quantity:	

No.	**Check List**	**Requirement**	**Yes**	**No**	**N/A**
1	Water Cement ratio	As per approved mix			
2	Surface preparation by mortar bedding	Fresh mortar			
3	Slump Testing	As per specification			
4	Adequacy of vibration	40mm and 60mm needle as required			
5	Segregation of aggregates	Not allowed			
6	Removal of temporary spacers and ties	All to be removed			
7	Shuttering displacement / settlement	Not allowed			
8	Number of cubes taken for testing	3 for RCC >6m3			
9	Continuity of operations	No break in between concreting			

Field Inspection Checklist **Placing, Consolidation, Finishing, Curing and Repair of Concrete**	Job Number	Project	Page of ½

SUBCONTRACTOR:_____ SUBCONTRACT NO: _____

REFERENCES (DRAWING, SPECIFICATION, PROCEDURE): _____

	ATTRIBUTE	**YES**	**NO**	**N/A**
A	PLACING			
1.	Pre-placement checklist completed? Placement authorized?			
2.	Concreting surfaces cleaned, moistened when required?			
3.	Conveying equipment suitable for placement?			
4.	Conveying equipment clean, properly maintained?			
5.	Vertical drop limits not exceeded?			
6.	Horizontal layers not exceeding two-feet in depth?			
7.	Flow of placement per sketch details?			
B	CONSOLIDATION			
1.	Vibrators previously tested and approved?			
2.	Systematic pattern used during vibration?			
3.	Vibrators:			
	a) Penetrating previous layer?			
	b) Not used for horizontal movement of concrete?			
	c) Withdrawn slowly?			
	d) Not over vibrating?			
C	FINISHING			
1.	Surface top properly screened, when required?			
2.	Finishing tools used for intended purpose?			
3.	Desired finish obtained? Even, smooth and level?			
4.	Joints, edges, corners properly finished?			
D	CURING			
1.	Forms left in place per construction specifications requirements?			
2.	Curing operations started immediately, adequate?			
3.	Curing protection periodically checked and maintained?			
4.	Curing is continuous to specified length of curing process?			
5.	Traffic and loading over surfaces controlled during curing?			

Field Inspection Checklist **Placing, Consolidation, Finishing, Curing and Repair of Concrete**	Job Number	Project	Page of **2/2**

SUBCONTRACTOR:_____ SUBCONTRACT NO: _____

REFERENCES (DRAWING, SPECIFICATION, PROCEDURE): _____

	ATTRIBUTE	**YES**	**NO**	**N/A**
E	REPAIR			
1.	Surfaces inspected? Serious defects documented?			
2.	Cosmetic repairs made?			
3.	Structural defects repaired in accordance with approved procedures?			

REMARKS: _____

QC SIGNATURE: DATE:

Inspection Notification Form	Job Number	Project	Page of **1/1**

SUBCONTRACTOR:_____DATE: _____

TYPE OF INSPECTION REQUESTED: _____

_____

_____

DATE AND TIME OF INSPECTION REQUESTED: _____

_____

_____

LOCATION OF INSPECTION REQUESTED: _____

_____

_____

OTHER COMMENTS: _____

_____

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_____

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_____

_____

_____

SUBCONTRACTOR SIGNATURE: DATE:

Non-Conformance Report	Job Number	Project	Page of 1/1

SUBCONTRACTOR	REPORT NO.	DATE

SPECIFICATION/DRAWING NO.

ITEM

PART I – To be completed by the engineer who detects a deviation.

DESCRIPTION OF NON-CONFORMANCE:

RECOMMENDED DISPOSITION: USE AS IS D REWORK D REPAIR D SCRAP D

SIGNED DATE

SWIMFIELD ENGINEER

PART I I– To be completed by the subcontractor who proposed the corrective action.

DESCRIPTION OF PROPOSED CORRECTIVE ACTION:

SIGNED DATE

REHABILITATION ENGINEER

PART III – To be completed by SWIM.

RECOMMENDATION AND REMARKS:

Proposed corrective action status: Approved D Rejected D

SIGNED DATE

CITL

PART IV – QUALITY CONTROL DISPOSITION (To be determined by QC Manager (Rehabilitation Engineer)

DECISION AND DISPOSITION INSTRUCTIONS: USE AS IS D REWORK D REPAIR D SCRAP D

SIGNED DATE

SWIMFIELD ENGINEER

SIGNED DATE

CITL

PART V – ENGINEERING DISPOSITION

METHOD OF APPROVALS:

D PHONE D MEMORANDUM D EMAIL D SPEC. CHANGE D DRAWING CHANGE

CONVEYED BY

D PROJECT MANAGER DATE

D PROJECT MANAGER DATE

PART VI – DISPOSITION VERIFICATION

D CORRECTIVE ACTION WAS ACCOMPLISHED ON

SIGNED DATE

SWIMFIELD ENGINEER

SIGNED DATE

CITL

Non-Conformance Report Log							Job Number	Project	Page of
SUBCONTRACTOR									
NCR No.	CONDITION DESCRIPTION	ORIGINATOR	DATE RECORDED	DATE TO SUBCONTRACTOR	PROPOSED CORRECTIVE ACTION BY S U B CONTRACTOR	PROPOSED APPROVED BY ENGINEER	DISPOSITION DATE	DISPOSITION VERIFICATION BY	

Contractor Non-conformance Letter (Sample)	Job Number	Project	Page of 1/1

Attention: _____

Subject: Non-conformance Report No. _____

Gentlemen:

The attached Non-conformance Report (NCR) details discrepancies on your subcontract.

Please review and take appropriate action to remedy this situation, also changing any procedures, methods and/or personal necessary to preclude similar problems in the future. Your attention is specifically drawn to Item 10, disposition date.

We are available to discuss the attached with you.

Very truly yours,
SWIM

_____
Component 1 Team Lead

cc: Subcontract File

REHABILITATION PRE-PUNCH LIST FORM

PROJECT		**PROJECT ID**	
SUBCONTRACTOR		**CONTRACT DATE**	
INSPECTOR NAME & TITLE		**INSPECTION DATE**	
ADDITIONAL INFO			

PRE-PUNCHLIST			
ITEM ID	**DESCRIPTION**	**LOCATION**	**DATE COMPLETE**
QA/QC Field Engineer Signature:		DATE:	
Subcontractor Signature:		DATE:	

REHABILITATION PUNCH LIST TEMPLATE

PRO JECT		PRO JECT ID	
SUBCO NTRACT OR		CO NTRACT DATE	
INSPECTO R NAME & TITLE		INSPECTIO N DATE	
ADDITIONAL INFO			

PUNCH ID	TASK NAME	RESPONSIBLE	DUEDATE	DESCRIPTION	COMMENTS