Proposed Construction of Two (2) Ranger Posts in Kidepo Valley National Park

USAID/ Uganda Biodiversity for Resilience (B4R) Activity

BIDDING DOCUMENTS

VOLUME 3 OF 6

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VOLUME 3.1 OF 6

Supplemental Technical Specifications

SECTION 1
PROJECT SCHEDULING

PART 1 GENERAL

1.01 SUMMARY

A. This Section addresses the management process of executing, controlling, and reporting project work.

B. The Contractor's Project Execution Schedule (PES) is the working schedule and the key Contract document representing the plan for executing all work under the Contract. At all times, the Contractor must comply with the Bidding Documents and the Contract General and Special Conditions.

C. The term PES, as used in this Section, refers to any and all stages of the schedule. The specific term BPES is used to identify a particular stage in the development of the baseline PES.

D. The means and methods implied in the PES for accomplishing the contract work are the sole responsibility of the Contractor.

E. The provisions in this Section cover all schedule documents and scheduling practices under the Contract whether they are referred herein or not.

1.02 RELATED DOCUMENTS

A. Other general conditions and special conditions of the Contract by reference or as amended in Contract conditions and other sections of these Contract Specifications apply to requirements of this Section. This Section in turn applies to the Contract Drawings, and all other Contract Technical Specifications.

1.03 DEFINITIONS and ACRONYMS

A. General

1. PDE – Procuring and Disposing Entity
2. Project Manager – The Representative of the PDE
3. FNTP – Final Notice to Proceed

B. Schedule related:

1. PES - Project Execution Schedule

2. BPES - Baseline Project Execution Schedule
3. PES Updates – BPES periodic updates
4. As-Built PES – Final PES Update
5. Current PES Update – Last accepted PES Update
6. CPM - Critical Path Method
7. WBS – Work Breakdown Structure
8. Task - An activity with duration
9. Milestone – A zero-days duration event in the PES
10. Fragnet – Part of the PES represented by a series of activities
11. Original Data – Initial planned data
12. Actual Data – Past record data
13. Resources – Labor, material, and equipment required to complete a project
14. Equipment - A resource used by the Contractor to construct the project
15. Materials (Supplies) - Resources purchased to be built into the Project, including electrical and mechanical equipment
16. Labor – Human resources
17. Open End – an activity having no logic predecessor or successor
18. Loose End – an activity having no logic links to either its start end or its finish end
19. FS – Finish-to-Start activity link
20. SS – Start-to-Start activity link
21. FF – Finish-to-Finish activity link
22. SF – Start-to-Finish activity link

1.04 PURPOSES of the PES

A. To provide a complete information and reference plan of execution of the Project.

B. To be the only plan of execution that is developed and updated throughout the project period of performance.

C. To assure coordination of the Contract Work between the Procuring and Disposing Entity (PDE) representatives, contractor's staff and personnel, subcontractors, material suppliers, and all other parties associated with the project work.

D. To provide short-term look-ahead plans of execution for control management.

E. To record and report actual performance progress.

F. To forecast final project completion and completion of future work based on actual performance to date.

G. To evaluate any time impact associated with unforeseen conditions, unexpected events, contract modifications, performance delays, compensation events, etc.

H. To be an impartial tool to evaluate any time or price adjustments.

I. To be the basis for evaluation of the work completed and the preparation of progress payments.

J. To become part of the As-Built Documents of the Contract.

1.05 SUBMITTALS

A. Must be submitted, reviewed, and accepted by the PDE-Project Manager in accordance with the requirements of the Contract.

B. Must be certified by the Contractor.

C. Submit the following as prescribed above:

1. **Baseline Project Execution Schedule Update (BPES)**
   a. To PDE within 14 days following the Contract Award.
   b. Acceptance of the BPES is a prerequisite to the Contractor submitting the first Application for Payment or invoice.

2. **Project Execution Schedule (PES) Updates**
   a. Following acceptance of the BPES, monthly PES update submissions are required commencing with the completion of the first monthly period.
   b. The Data Date of the PES Updates must be consistent with the Closing Date of the Applications for Progress Payment
   c. The Final PES Update must become the As-built PES.
   d. Acceptance of the As-built PES is a prerequisite to:
      1) Acceptance of As-built Documentation

D. The Contractor must provide a list of all necessary project permits prior to Site Possession/Site Handover.

   1. The Contractor must update the status of these permits in conjunction with each monthly schedule update.

E. If the Contractor does not submit acceptable schedules within the times prescribed above, the PDE may withhold funds from progress payments.

F. Every PES submittal must include the following:

   1. Electronic copies (as directed by PDE/Project Manager) of:
      a. Narrative Report
      b. Updated Procurement Log
      c. Bar charts of the following schedule fragments
         1) Critical Path Progress Report
         2) Next Period Look-Ahead
         3) Labor resource histogram and cumulative curve

4) Cost histogram and cumulative curve

1.06 PDE/Project Manager REVIEW PROCESS

A. For all submittals identified in this section, the PDE must review the schedule and supporting documentation for contract compliance. Formal submittal disposition will be issued within 15 calendar days after receipt of all required information.

B. The PDE will review the updated PES to verify the accuracy of the on-site work progress – activities started, completed, and on-going and their respective completion percentages.

C. Consistent with the PDE disposition of "acceptance" of the BPES, or PES Update, acceptance does not modify or imply a modification to the terms of the Contract.

D. The PDE may request additional information as a result of the review process, and the Contractor must comply with such request.

E. The PDE may request the Contractor to participate in any meeting necessary to reach a mutual agreement on any PES, PES report, PES update, and revisions of these items.

F. If any of the required contractor submissions are returned for correction, addition, or revision; then they must be resubmitted, as prescribed above, within 15 calendar days after the request for resubmission.

G. PDE direction to the Contractor for revision and resubmission of a PES update must not preclude the contractor from preparing and submitting the next PES update on time.

H. PES review comments and acceptance or rejection by the PDE of any PES version does not relieve the Contractor of its responsibility for the accuracy and feasibility of the PES or of its obligation to achieve the dates of milestones and Final Project Completion of the PDE's acceptance of the Work. The PDE acceptance does not expressly or impliedly warrant, acknowledge, or admit the reasonableness of the activities, logic, durations, etc., of the PES.

1.07 PROJECT CONTROLS

A. The Contractor must:

1. Be responsible for the preparation of the required schedules and related documents in compliance with the provisions of this Section, the Bidding Documents, and the Contract.
2. Be responsible for Project coordination procedures of this Section throughout the construction period of the Contract.

3. Provide prompt response to PDE/Project Manager inquiries about the status of the Project, or any subject related to the progress of the Project.
4. Work in close cooperation with the Contractor's subcontractors and suppliers relative to the development and implementation of the PES.

B. The PDE/Project Manager will be permitted to review the Contractor's work progress at any time through direct contact with the Contractor staff and have full access to the PES.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 SCHEDULING SOFTWARE

A. The software must be commercially available, construction related scheduling software product capable of producing and maintaining a CPM schedule in compliance with all the principles of good scheduling practice and with the provisions of this section. The Contractor must utilize either Primavera P6 or Microsoft Project scheduling software. Any other software will not be accepted. The Contractor shall procure and operate enough numbers of the software licenses at its own expense, throughout the duration n of the Project and until Final Completion and Acceptance by the PDE.

B. The PES must comply with all the principles, concepts, and definitions in this Specification Section, regardless of the methods and terminology used by the software selected.

C. The scheduling software (Primavera P6 or Microsoft Project) must be compatible with Microsoft Windows 10 operating system.

3.02 SCHEDULE DEVELOPMENT

A. The detailed PES must include tasks and milestones representing the entire Contract Scope of Work including:
1. General requirements
2. Submittals
3. Procurement & Shipping
4. Mobilization
5. Construction
6. Equipment and Systems Start-up and Commissioning
7. Closeout and Demobilization

B. Baseline schedule development:
1. the Baseline Schedule must be developed in accordance with all provisions herein included unless it is specifically indicated.

2. The baseline must be fully Cost-loaded to the full Contract amount. Details of the Cost-load provisions are included below in this Section.
3. The baseline must use days as the unit basis for development.
4. The Total Float (Slack) of all activities must not exceed 90 days.
5. The baseline schedule must include at least three calendars applicable to each activity as it is indicated below in this Section.
6. The baseline must include at a minimum the milestones listed below in this Section.
7. The baseline must include considerations for local weather and climate seasons.
8. Constraints must be avoided; otherwise; the presence of constraints in the schedule must be indicated and justified in the Narrative report.
9. Lags and Leads are prohibited.
10. Open-Ends and Loose-Ends are not permitted.
11. SS, FF, and SF links must be avoided. If used, the Contractor must indicate it in the Narrative report and confirm that the schedule is free of Circular Loops, Open-Ends, and Loose-Ends.
12. Retained Logic must be logic applicable to the baseline schedule.
13. Activity Codes must be assigned to all activities. Details of the minimum Activity Codes required are indicated below in this Section.
14. Float available in the schedule, at any time, must not be considered for the exclusive use of either the PDE or the Contractor.
15. In the event the BPES calculates an early completion date of the last activity prior to the project completion date, the contractor must identify those activities that it intends to accelerate and/or those activities that are scheduled in parallel to support the Contractor's "early" completion. The last activity must have a late finish constraint equal to the contract completion date and the schedule will calculate positive float. The PDE will not approve an early completion schedule with zero float on the longest path. The PDE is under no obligation to accelerate activities for which it is responsible to support a proposed early contract completion.
16. The baseline schedule is the reference plan of execution and must remain invariable throughout the duration of the project unless changes to the plan arise. Provisions to change the baseline schedule are included below in this Section.

C. **PES Updates**:

1. The updating process of the BPES is limited to the input of Actual Data; any other addition or deletion must be treated as a change to the baseline. Provisions to change the baseline schedule are included below in this Section.
2. Actual Data is considered only Actual Dates, Actual Durations, Actual Costs, and Actual Percentages of Completion.
3. For Control purposes, activity percentage of completion must be identical to cost percentage of completion.
4. Any activity or sequence of activities added to the schedule as a result of alleged constructive changes made by the PDE may be added to a copy of the current schedule, subject to the approval of the PDE/Project Manager only. Assign activity codes for these activities with a Contract Change Code. Key the code

values to the Contractor's numbering system. Approval to add these activities does not necessarily mean the PDE accepts responsibility and, therefore, liability for such activities and any associated impacts to the schedule, but rather the PDE recognizes such activities are appropriately added to the schedule for the purposes of maintaining a realistic and meaningful schedule.

D. **Narrative Report**:
1. All PES submissions must include a Narrative Report
2. The narrative report must include: a description of activities along the 2 most critical paths where the total float is less than or equal to 20 calendar days, a description of current and anticipated problem areas or delaying factors and their impact, and an explanation of corrective actions taken or required to be taken. The narrative report is expected to communicate to the PDE, the Contractor's thorough analysis of the schedule output and its plans to compensate for any problems, either current or potential, which are revealed through that analysis. Identify and explain why any activities that, based on their calculated late dates, should have either started or finished during the update period but did not. The Narrative report must also describe any out of sequence work activities that have occurred during the reporting period, the reasons therefore and the effect of this out of sequence work on the remaining unfinished work.

E. **Milestones**:

The BPES must include at a minimum the following milestones as applicable:
1. Contract Award
2. Contractor's Submission of Bank Guarantees (for advance payment, for performance and all other guarantees required under the Contract).
3. Site Handover (or Site Possession)
4. Mobilization Start and Completion Milestones
5. Plans Submissions (Safety, CQC and others
6. BPES Submission and BPES Acceptance
7. O&M Manuals Submission
8. As-Built Documents Submissions
9. Commissioning Completion & Submission of Documents
10. Project Completion & Acceptance of PDE
11. Start & Completion of Warranty Period

F. **Cost Loading**:
1. Every construction activity must be cost-loaded
2. The Total Budgeted or Total Planned Cost of the PES must coincide with the Total Contract Amount.
3. G&A/Site Overhead Costs must be distributed proportionally to all cost-loaded activities.
4. Assign cost values (based on supplier invoice, shipping invoice, taxes, and other indirect costs) to materials stored on site for which the Contractor will request payment. A cost loaded activity, signifying site arrival and PDE verification, must be included as a successor to the shipping activity for all such materials.

   a. Materials delivered on the site but not installed, including completed preparatory work and off-site materials to be considered for progress payment must be major high cost, long lead, special order, or specialty items, not susceptible to deterioration or physical damage in storage on the construction site.
   b. Materials not acceptable for payments include consumable materials such as nails, fasteners, conduits, gypsum board, glass, insulation, and wall coverings.
5. The following activities must NOT be cost loaded:
   a. Procurement activities
   b. Manufacturing activities
   c. Shipping activities
6. The following type of activities must NOT be cost loaded:
   a. Summary activities
   b. Hammocks activities
   c. Level of Effort activities
   d. Milestones
   e. Flags

G. **Cost Histogram and Cumulative Curve**:
1. Every baseline schedule submittal must include:
   a. The complete monthly basis Histogram of the projected Late Dates Costs
   b. The complete Cumulative Cost Curve of the projected Late Dates Costs
2. Every schedule update submittal must include:
   a. The complete monthly basis Histogram of the Actual Dates Costs and projected Early Dates Costs
   b. The complete Cumulative Cost Curve of the Actual Dates Costs and projected Early Dates Costs

H. **Calendars**:
1. All milestones must be based on a 7-day calendar with no holidays.
2. All procurement and shipping activities must be based on a continuous 7-day calendar with no holidays.
3. All construction activities must be based on a 5 or 6-day calendar (based upon planned construction) that includes all applicable holidays and expected weather days (e.g. rainy periods)
4. Any additional calendar used must be identified in the Narrative report.

I. **Activity Codes**:
All activities must include, at minimum, the following codes:
1. Type of Work: Submittals, Procurement, Construction
2. Work Area: Subdivided as needed for easy identification
3. Responsibility
4. Contract Modification/Change: if applicable
5. Phase: if applicable

3.03 PES IMPLEMENTATION

A. The Current PES Update and the BPES must be available at the construction site at all times.

B. The Contractor must conduct weekly meetings with the PDE/Project Manager at the construction site to review the PES in relation to the progress of the Project.

C. During construction the Contractor must display at all times a full size, current, short term schedule available to all Contractor personnel.

D. The process of updating the PES must be limited to entering actual data to the accepted baseline.

3.04 REVISING THE BASELINE

A. Revising the Baseline must only be allowed subsequent to the Data Date of the Current PES Update.

B. Acceptance of any revision to the current PES is prerequisite to any logic changes to the PES update.

C. The BPES is the Plan of Execution and must be kept unaltered at all times under normal conditions. In the event that changes are required due to change of conditions such as contract modifications, or other unforeseen situations, the Contractor must request revising the Baseline.

1. The Contractor must propose the revision to the PDE/Project Manager for review and acceptance.
2. This proposal must include a narrative of reasons and a list of all the changes with descriptions and justifications.
3. The Revised BPES must be developed and proposed on the Current PES Update keeping the same Data Date.
4. Once the changes are accepted by the PDE/Project Manager, the Revised BPES will be applicable to the subsequent PES Updates. Only the PDE/Project Manager can approve changes.

3.05 PLAN OF RECOVERY OR PLAN OF MITIGATION

A. The PDE/Project Manager can request the Contractor to submit a Plan of Recovery or a Plan of Mitigation due to any special situation.
B. The Plan of Recovery or the Plan of Mitigation must consist of a detailed description of actions to be taken to achieve the targets of the PES. These actions do not necessarily imply any alteration of the PES. The Contractor then must submit a narrative description of the Plan.

C. In the event that the Revision of the Baseline is required, the Contractor must proceed in accordance with the provisions for Revising the Baseline. Upon acceptance of the PDE/Project Manager, the Revised Baseline then must be implemented and can be named the Recovery schedule or the Mitigation schedule.

3.06 TIME IMPACT ANALYSIS (TIA)

A. The purpose of the TIA is to identify and evaluate the impact of a particular event or situation on the completion of the Project.

B. **Past Events**:
If the event or situation subject to analysis occurred in the past, the TIA will require the following:
1. A fragnet from the PES Update before the subject event or situation, identifying and filtering the activities related to it, and the Project Completion milestone.
2. A fragnet with the same activities and Project Completion milestone from the PES Update following the occurrence of the event or situation.
3. A narrative description comparing the two fragnets to demonstrate that the slippage of Project Completion was only due to the event or situation subject of the analysis.
4. Similar fragnets of other PES versions and copies of any related documents such as daily reports, meeting minutes, correspondence, etc. to support of the analysis.

C. **Projected Events**:
If the event or situation subject to analysis has not occurred but can be projected in the PES, then the TIA will require the following:
1. A fragnet from the Current PES Update identifying and filtering the activities related to the event or situation, and Project Completion milestone.
2. A Revision of the Baseline in accordance with the provisions above to include the anticipated conditions of the subject event or situation.
3. A narrative description comparing the two schedules to demonstrate that the slippage of Project Completion will occur due only to the event or situation subject of the analysis.
4. Similar fragnets of other PES versions and copies of any related documents such as daily reports, meeting minutes, correspondence, etc. to support of the analysis.

3.07 PAYMENT APPLICATION

A. Approval is dependent on
1. Percent complete verification of all progressed activities
2. Determination of the Actual Cost from the approved PES Update for the current month
3. Submission of all required documents as detailed in “1.05 Submittals” above.

3.08 PROCUREMENT LOG

A. The Contractor must prepare a Procurement Log to assist in planning, executing, and monitoring Project construction. The long lead and major systems equipment items must be incorporated into the PES and all procurements must be linked as predecessors to the appropriate construction activities.

B. The Procurement Log must, at a minimum, contain the following for each listed item:

1. Specification section and paragraph number
2. Item description
3. Date needed for construction
4. Quantity needed for construction
5. Item source (vendor or contractor name)
6. Contractor purchase order date
7. Scheduled shipping date
8. Scheduled job site arrival date
9. Actual ship date
10. Actual site arrival date
11. Quantity actually received
12. Rejections

END OF SECTION

CONTRACTOR QUALITY CONTROL

Part 1 General

1.01 Quality Control

A. The Quality Control system to be implemented during the project construction phase must ensure that the facility meets the contract design, quality, and functional standards. To this end the Contractor is required to establish, implement, and maintain an effective Construction Quality Control (QC) Plan. The QC Plan must cover all construction operations both onsite and offsite, and must be keyed to the proposed construction sequence (definable features of work).

B. The Construction Quality Control Plan must include, as a minimum, all quality processes performed by the contractor, subcontractors, fabricators, suppliers, and purchasing agents. ISO 9001:2015 must be used as a base line for developing the control processes identified in Part 3 (Execution) of this specification.

C. The Contractor is responsible for quality control and must establish and maintain an effective quality control system. The quality control system must be defined by the QC Plan, which defines the Contractor's quality policy, lines of authority and responsibility, QC personnel qualifications, and the procedures and organization necessary to produce a finished product that complies with the contract requirements.

D. The Contractor's representatives will be held accountable for the quality of work and are subject to removal at the direction of the PDE/Project Manager for failure to comply with quality requirements specified in the Contract. The Contractor's representatives in this context must mean the individuals from the Contractor's organization with responsibility for the overall supervision of field activities for the project.

E. The PDE will schedule performance audits during the construction phase to assess the Contractor's performance against contract requirements and QC Plan implementation. The PDE/Project Manager must use the audit results to evaluate the completed work and progress made against the contract documents and project schedule when reviewing Contractor requests for progress payments.

F. NOT USED

1.02 Referenced/Related Documents:
The publications listed below are incorporated into the specification by reference. Equivalent and equal international standards may be acceptable to the PDE/Project Manager (at the PDE's discretion) if proposed by the Contractor.

A. American Society for Testing and Materials (ASTM) ASTM D 3740 (Latest edition as

of contract award date) Minimum requirements for agencies engaged in the testing and/or inspection of soils and rock as used in engineering design and construction.

B. ASTM E 329 (Latest edition as of contract award date) Agencies engaged in the testing and/or inspection of materials used in construction.

C. ISO 9001:2008 Quality Management Systems requirements is a quality program document that the contractor must use to develop quality control processes for the QC Plan.

1.03 Submittals: The Contractor must submit the following:

A. Contractor's Quality Control Plan (QC Plan): The QC Plan must be submitted within fourteen (14) calendar days after Contract Award. No construction work must be undertaken before QC Plan acceptance by the PDE/Project Manager.

B. The name, qualifications (in resume format), duties, responsibilities and authorities of each person assigned to a Quality Control (QC) function must be submitted to the PDE for review. The PDE/Project Manager will reject personnel who are not qualified for the positions for which they have been proposed. Changes to QC organization staffing must only be made after acceptance by the PDE/Project Manager of the proposed changes.

C. The Contractor must submit a Quality Control Report to the PDE daily. Reporting must begin on the first day the contractor's forces arrive on site and must continue until the contractor's forces have completely demobilized. Daily reports must be submitted by 8:00 a.m. the following morning and must include, at a minimum, the information discussed in this section. The report format must be accepted by the PDE/Project Manager prior to use.

D. The Contractor must submit copies of audits and surveys of testing agency qualifications, which should include both personnel and equipment certifications.

E. Other contract provisions and attachments, including those provided by reference and amendment, apply to the requirements of this section. This Section in turn applies to the Contract Drawings and to Technical Specifications.

1.04 Qualifications of Quality Control Personnel

A. The Contractor Quality Control (QC) Manager must have experience implementing construction quality control programs for similar projects. The QC Manager must be on site at all times during construction and must be an employee of the prime contractor. In the event the QC Manager must be away from the site, the contractor must provide a suitable substitute, acceptable to the PDE, who is familiar with the project and the QC program. The QC Manager must report to an authorized senior executive in the Contractor's home office management team and not to the

contractor's site manager, contract manager, or contractor's project manager on site. His/her autonomy in managing and enforcing the quality control program is critical and must be reviewed and tested periodically by the PDE.

B. QC Inspection and Testing personnel must be qualified in accordance with the following:
    1. Current certifications as determined by the individual's employment specialties from National or International standards organizations (AWS, ICBO, ASME, IEEE, ISO, ACI, AWWA, etc.) and,
        a. College degree in engineering or architecture that is relevant to the individuals' employment specialty. In addition10 years of overall construction experience. Experience must include a minimum of 5 years implementing construction quality control programs for similar projects, or;
        b. Completed High School education with 15 years of construction experience as a construction inspector or trades person, and successful completion of a company or union sponsored training program in the discipline to be inspected.

1.05 Incidental Services

A. The contractor must provide incidental services by engaged QC agencies, laboratories, and consultants, and must accommodate services performed by the PDE directly or by vendors engaged by the PDE. Incidental services include, but are not limited to:
    1. Material testing.
    2. Assistance in gaining access to the works, in obtaining test samples, and in the subsequent repair of work and substrates, where requested by the QC agency.
    3. Temporary facilities to be utilized for testing services.
    4. Handling, curing, storing, and protecting test samples at the Project site.

Part 2 Products (not used)
Part 3 Execution

3.01 Content of the Construction Quality Control Plan

A. The QC Plan must include, at a minimum, all work processes performed by the contractor, subcontractors, fabricators, suppliers, and purchasing agents.
    1. A description of the quality control organization, including a chart showing lines of authority and acknowledgement that the QC staff will implement the three-phase approach to construction quality control as described within.
    2. The name, qualifications (in resume format), duties, responsibilities and authority of each person assigned a QC function.
    3. A copy of a letter, signed by the same official of the firm who signed the contract, which describes the responsibilities of the QC Manager and delegates sufficient authorities to him to ensure he can implement the QC plan

effectively. The QC Manager must have the authority to stop the installation of work that does not comply with the contract and construction documents.

4. Procedures for scheduling, reviewing, certifying and managing submittals, including those of subcontractors, offsite fabricators, suppliers and purchasing agents. The QC Manager must be responsible for certifying that all submittals are in compliance with the contract requirements.
5. Procedures to control, verify, accept, and document each specific test required to be performed in the specification. The Contractor must provide a written report of each QC Plan inspection and test performed. The report must include the following as a minimum:
    a. Project title and project number.
    b. Inspection/test title, contract reference, and sequence number.
    c. Dates and locations of inspections, dates of inspections/tests, and the related contract specification section number.
    d. Recognized industry test methods and specifications. List all testing equipment used with serial numbers.
    e. Name of testing laboratory and the individual conducting the inspection or test.
    f. Ambient conditions at the time of sample-taking and inspection or test.
    g. Inspection and test data, results, interpretations, and analysis of information developed.
    h. Agency or individual comments and professional opinions concerning test compliance, whether work complies with requirements, and whether retesting or other testing is recommended. These comments and opinions must bear the responsible individual's signature.
    i. Other data as required or implied by the nature of a particular inspection or test or by provisions in related technical sections of the contract specifications or drawing notes.
    j. Where applicable, the Contractor must include a statement (Certificate of Compliance) of the agency or individual conducting the inspection or test, certifying that the materials, equipment, or services comply with the requirements of the Contract. This statement must include any observed or determined reservations in certifying such materials, equipment, or services.
6. Procedure for tracking preparatory, initial, and follow-up control phases of each definable feature of work.
7. A procedure for inspection of work and materials, including receiving inspections and control of materials staged for construction on site.
8. A corrective action procedure for identifying and controlling construction deficiencies from identification through corrective action and acceptance.
9. Document control and reporting procedures, including format.
10. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks, has separate control requirements, and may be performed by different trades or disciplines. Although each trade or technical specification section may generally be considered a definable feature of work, there are frequently more than one

definable feature under a particular section. This list must be included and submitted as the index to the QC Plan.

11. Procedures to control and document design changes must be included in the QC Plan. All design changes must be submitted to and accepted by the PDE. A complete set of drawings used in the As-Built (red line) process will be controlled on site by the QC Manager. All red line changes to the design must be accepted by the PDE. Red line changes must be initialed by the QC Manager and the COR or his designated representative.
12. Logs of test equipment calibrations.

3.02 Quality Control Meetings

A. Prior to starting site work, the Contractor must schedule a Preparatory Inspection coordination meeting with the PDE/Project Manager and discuss the QC Plan. During the meeting, a mutual understanding of the plan details must be developed, including the forms for recording the QC inspections, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of the Contractor's management and control with the PDE. Meeting minutes must be prepared by the Contractor and signed by both the Contractor and the PDE and the minutes must become a part of the contract record. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the QC system or procedures that may require corrective action by the Contractor.

B. All timeframes identified in the QC Plan, for onsite and offsite activities, including interrelationships between QC Plan actions and the PDE's related actions, will be reviewed for acceptance by the PDE.

C. After start of construction, the Contractor's QC Manager must conduct weekly QC meetings at the Project Site with key Contractor staff, including the Contractor's site/contract or project manager, site superintendents, and other QC staff.

D. The Contractor must notify the PDE, who may elect to attend or send representatives, at least 48 hours in advance of weekly QC meetings.

E. At a minimum, the following topics must be discussed and documented at QC meetings:
   1. Status of all on-going quality-related matters.
   2. Deficiencies identified or rectified since previous meetings.
   3. Work planned for the following two weeks and supporting QC actions.
   4. Construction methods and approaches for quality construction on upcoming work items.
   5. The Contractor must prepare and distribute detailed minutes of all QC meetings for signature by the Contractor's Representative and the PDE/Project Manager.

3.03 Three Phase Approach to Quality Control

A. The three phases of control must be conducted by the QC Manager for each definable feature of work as follows:

1. Preparatory Phase: This phase must be performed prior to beginning work on each definable feature of work; after all required plans, documents, materials are accepted. A preparatory inspection meeting must be called by the QC Manager to demonstrate that the Contractor has all the necessary materials, equipment and personnel to start a definable feature of work. Agenda items must include:
   a. Review of the applicable specifications.
   b. Review of the contract drawings.
   c. Confirmation that all materials and/or equipment have been tested and submittals have been received and accepted.
   d. Review of provisions that have been made to provide required control inspection and testing.
   e. Examination of the work area to ensure that all required preliminary work has been completed and is in compliance with the contract.
   f. Physical examination of required materials, equipment, and sample work to ensure that they are on hand, conform to accepted shop drawings or submitted data, and are properly stored.
   g. Review of the applicable safety requirements to ensure they are met.
   h. Discussion of procedures for controlling quality of the work, including repetitive deficiencies.
   i. Discussion and scheduling for the initial control phase.
   j. The Contractor will provide to the PDE/Project Manager the agenda 24 hours in advance of the preparatory control meeting. This meeting must be conducted by the QC Manager and attended by the superintendent and foremen responsible for the definable feature of work and other QC personnel as applicable. The results of the preparatory phase activities must be documented by separate minutes prepared by the QC Manager and attached to the daily QC report. The responsible superintendent and foremen must instruct applicable craftsmen as to the acceptable level of workmanship required by the contract.

2. Initial Inspection Phase: This phase must be accomplished at the beginning of field construction of a definable feature of work. This phase must be held at the work site with a demonstration of how the work is to be performed in order to meet the contract requirements. If mock-ups are required for a definable feature of work, they must have been completed far enough in advance of the Initial Phase that all materials must have hardened or dried and must be in such condition as the finished product will achieve at completion. Agenda items must include:
   a. Review the work to ensure that it is in full compliance with contract requirements as discussed in the Preparatory Phase meeting. The minutes of the preparatory meeting must be reviewed as necessary.

b. Verify the adequacy of controls to ensure full contract compliance. Verify required control inspections and testing.
c. Establish the level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required samples and mock-ups as appropriate.
d. Resolve all differences.
e. Review safety requirements to include compliance with and possible revision of the safety plan and activity hazard analysis. Review the activity hazard analysis with all workers. Ensure that the safety control barriers and/or signs have been correctly installed.
f. The initial inspection/phase should be repeated anytime a new crew begins work on a definable feature of work or any time acceptable quality standards are not being met.
g. The Contractor will provide the agenda to the PDE/Project Manager at least 48 hours in advance of beginning the initial phase. Separate minutes for this phase must be prepared by the QC Manager and attached to the daily QC report. The exact location of the initial phase must be indicated for future reference and comparison with follow-up phases.

3. Follow-up Inspection Phase:
Daily checks must be performed to ensure that control activities, including control testing, are providing continued compliance with contract requirements until completion of the particular feature of work. The checks must be made a matter of record in the QC documentation. Final follow-up checks must be conducted, and all deficiencies corrected prior to starting additional features of work which may be affected by the deficient work. The Contractor must not build upon nor conceal deficient work.

B. Completion Inspection (also known as Schedule of Defects or Punch-List):

1. Punch-List Inspection:
At completion of all work or any increment thereof, the contractor must conduct joint inspections of the work with the PDE/Project Manager. The contractor must record all deficiencies and work identified as not conforming to the plans and specifications, and a list of the findings, by location, must be submitted to the PDE/Project Manager within two days after each joint inspection. The list of these findings must constitute the punch-list. At completion of all punch-list work or any increment thereof, the contractor must conduct a joint re-inspection with the PDE/Project Manager to verify completion of the punch-list work. Both the contractor and the PDE/Project Manager must confirm mutual agreement of completion by signing the punch-list and indicating that each item on the punch-list is complete. The contractor must submit two hardcopies of the signed punch-list and an electronic copy of the signed list in xxx.pdf format.

2. Acceptance Inspection:

No later than two (2) weeks before project completion the contractor must conduct the joint, acceptance inspection with the PDE/Project Manager. The contractor must provide a minimum of 14-days advance written notice to the PDE and certify the work must be complete prior to commencing the acceptance inspection.

During the joint, acceptance inspection the contractor must record all deficiencies and all work identified as not conforming to the contract, plans and specifications. A list of the findings, by location, must be submitted to the PDE within two days after the inspection. The list of these findings must constitute the list of final acceptance defects. The contractor must immediately complete all work on the list of final acceptance defects. At completion of all items on the list of final acceptance defects, the contractor must conduct a joint re-inspection with the PDE/Project Manager to verify completion. Both the contractor and the PDE must confirm mutual agreement of completion by signing the list of final acceptance defects and indicating that each item is complete. The contractor must submit two hardcopies of the signed list of final acceptance defects and an electronic copy of the signed list in xxx.pdf format. The project completion and acceptance certificate will depend upon the final acceptance inspection results.

3.04 Daily Reporting

A. The Contractor must provide QC Daily Reports that provide factual evidence that required quality control activities and/or tests have been performed. These records must include the work of subcontractors and suppliers and must be on an acceptable form that includes, as a minimum, the following information:
   1. Contractor/subcontractor and their area of responsibility.
   2. Work performed each day, giving location, description, and by whom performed. Work conducted on building structures must be located by column line.
   3. Test and/or control activities performed with results and references to specifications and drawings requirements. The control phase should be identified Preparatory, Initial, or Follow-up.
   4. List deficiencies noted along with corrective action.
   5. Quantity of materials received at the site with statement as to acceptability, storage, and reference to contract specifications and drawings. Documents used to certify materials and equipment should be traceable to the material or equipment by a unique identification number i.e., heat number, serial number, etc.
   6. Submittals reviewed, with contract reference, by whom reviewed, and action taken.
   7. Off-site surveillance activities, including actions taken.
   8. Job safety evaluations stating what was checked, results, and instructions or corrective actions taken.
   9. Instructions given/received and conflicts in plans and/or Specifications.
   10. The QC Daily Report must indicate a description of trades working on the project and where; the number of personnel working; weather conditions encountered; and

any delays encountered. These records must cover both conforming and deficient features and must include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The original and one copy of these records in report form must be furnished to the PDE/Project Manager daily by 8:00am the following day. Reports must be submitted for days on which no work was performed. Attached to the daily reports must be copies of test reports, inspection reports, and reports prepared by quality control personnel or agencies.

3.05 RESTORATION AND PROTECTION

A. Restoration: Upon completion of inspections, sampling, testing, and correction of defects, the Contractor must repair damaged work and substrates and restore finishes to eliminate deficiencies in visual and performance qualities. This restoration must be in compliance with the Contract Documents.
B. Continued Protection: Continued protection of completed work must be provided throughout the construction period and protective measures must be monitored in relation to construction activity.

3.06 Records

A. The Contractor must maintain a complete record of QC Plan actions, ready for PDEs examination at any time. Defects, deficiencies, and non-compliance must be highlighted along with corrective actions and any reconstruction completed, to be completed, or recommended for acceptance by the PDE/Project Manager.

END OF SECTION

CONSTRUCTION SAFETY AND OCCUPATIONAL HEALTH

PART 1 GENERAL

1.01 SUMMARY

A. This Section specifies Contractor responsibilities for providing safety and occupational health for all persons authorized to be at the project site and protection of property on and adjacent to the project site. The Contractor is responsible for ensuring subcontractor compliance with the safety and occupational health requirements contained in this specification and those required by local laws, rules and regulations.

1.02 RELATED DOCUMENTS

A. Other general and special provisions of the Contract, Contract Drawings and Technical Specifications and other sections of these Contract Specifications apply to requirements of this Section.

B. Regulations and Standards: One or more clauses by reference in this document will have the same force and effect as if the full text was contained. Governing regulations and specific technical safety and health requirements for work performed at the project site and incorporated into this construction safety and occupational health program include compliance with the following publications. Use the latest published edition unless specifically dated otherwise below:

1. Uganda Health and Safety Regulations
2. U.S. Army Corps of Engineers (USACE) Safety and Health Requirements Manual, EM 385-1-1 dated 30 November 2014.
3. NFPA Code 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations.
4. ANSI A10 Series Standards for Safety Requirements for Construction and Demolition.
5. NFPA Code 51B, Standard for Fire Prevention during Welding, Cutting, and Other Hot Work.
6. NFPA 70, National Electrical Code
7. U.S. Occupational Safety and Health Standards (OSHA) Temporary Labor Camp Standards – 1910.142, if applicable.

1.03 DEFINITIONS

A. Refer to Appendix “Q” of EM-385-1-1for definitions of all safety-related terms specifically, PDE/Government Designated Authority, Hazard, Activity Hazard Analysis, Position Hazard Analysis, Competent Person, Qualified Person, and Confined Space.

B. Lavatory: A basin or similar vessel for washing hands, arms, face and head. Sixty (60)

centimeter diameter (24 inch) basin rims shall be equal to one lavatory.

C. Toilet Facilities: Enclosures containing one or more toilet fixtures or commodes for the purpose of defecation, urination, or both.

D. Urinal: A toilet fixture maintained within a toilet room for the sole purpose of urination.

E. Competent Person Safety: One who can identify existing and predictable hazards in the working conditions that are dangerous to personnel and who has authorization to take prompt corrective measures to eliminate them.

F. Competent Person for Confined Space: A person with thorough knowledge of OSHA's Confined Space Standard, 29 CFR 1910.146, designated in writing by the employer to be responsible for the immediate supervision, implementation and monitoring of the confined space program, who through training, knowledge and experience in confined space entry is capable of identifying, evaluating and addressing existing and potential confined space hazards and who has the authority to take prompt corrective measures with regard to such hazards.

G. Competent Person for Excavation/Trenching: A person meeting the competent person requirements as defined in the definitions of EM 385-1-1, who has been designated in writing, by the employer, to be responsible for the immediate supervision, implementation and monitoring of the excavation/trenching program, who through training, knowledge and experience in excavation is capable of identifying, evaluating and addressing existing and potential hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

H. Competent Person for Fall Protection: A person designated in writing by the employer to be responsible for the immediate supervision, implementation and monitoring of the fall protection program, who through training, knowledge and experience in fall protection and rescue systems and equipment, is capable of identifying, evaluating and addressing existing and potential fall hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

I. Qualified Electrician: One who has received training in and has demonstrated skills and knowledge in the construction and operation of electrical equipment and installations and the hazards involved. This includes the skills and techniques necessary to distinguish exposed live parts from other parts of electrical equipment to determine voltages and clearances necessary for the safe execution of the work.

1.04 SUBMITTALS

A. The Contractor must prepare and submit the following:

1. Resume of the proposed Safety and Health Program Manager (SHPM) for review by the PDE/Project Manager.

2. A Construction Health and Safety Plan.

    a. Acceptance by the PDE/Project Manager is a prerequisite for beginning construction activity at the project site.

3. Submit a Fall Protection and Prevention Plan with the Health and Safety Plan, and update every six (6) months, and at other times as fall protection requirements and conditions related thereto change.
4. Activity Hazard Analysis: Before beginning each work activity involving a type of work presenting hazards not experienced in previous project operations or where a new work crew or sub-contractor is to perform the work, the Contractor(s) sub-contractors performing that work activity must prepare an AHA. AHA's must define the activities being performed and identify the work sequences, the specific anticipated hazards, site conditions, equipment, materials, and the control measures to be implemented to eliminate or reduce each hazard to an acceptable level of risk. Work must not begin until the AHA for the work activity has been submitted and accepted by the PDE/Project Manager and discussed with all persons engaged in the activity, including sub-contractors, and at preparatory and initial control phase meetings. The names of the Competent/Qualified Person(s) required for a particular activity (for example, excavations, scaffolding, fall protection, and other activities as specified by EM 385-1-1 shall be identified and included in the AHA. Proof of their competency/qualification shall be submitted to the PDE/Project Manager for acceptance prior to the start of that work activity. The AHA must be reviewed and modified as necessary to address changing site conditions, operations, or change of competent/qualified person(s).
5. Heat Stress Plan: Where ambient temperatures above 40 degrees Celsius are the norm during the year the contractor must submit a plan as to how they will mitigate the dangers of heat stress at all times with an emphasis on regular hydration and periods of rest.
6. Hazardous Work Permit Requests as required.
7. Material Safety Data Sheets (MSDS) if required. Refer to requirements of USACE EM 385-1-1.
8. Minutes of all safety related meetings.
9. Records of Safety and Health Inspections: The Contractor must make records of inspections available to the Project Manager.
10. Accident Investigation Report: Report within 24 hours of each accident/incident. The Contractor must report/submit an accident/incident to the PDE/Project Manager for all accidents that require medical attention beyond first aid. This must include all incidents that meet the OSHA definition of "Recordable Incidents".
11. Potable Water Documentation: On a monthly basis, substantiation that potable water is safe for human consumption.
12. As part of the injury and illness rates and occupational health statistics, the following is required as part of the contractor's submittal requirements:

    a. As part of the contractor's monthly progress report to the PDE/Project Manager on the status and progress of the work, the contractor must include the total number of hours worked during the previous month for all employees at the project site in the employ

of the contractor and all sub-contractors. The contractor must also include the cumulative total from the start of the calendar year up to the most current month.

b. Failure to provide this information will result in the PDE/Project Manager retaining funds from the monthly progress payment until an accurate submittal of worker hours both monthly and cumulatively has been received.

1.05 SAFETY OFFICIALS

A. Safety and Health Program Manager (SHPM)

1. Prior to commencing on-site construction activities, the Contractor must assign a qualified full-time SHPM whose duties shall be effective implementation, coordination, and enforcement of the Construction Health and Safety Plan. The SHPM must be on-site at all times when work is being performed. The SHPM must report to a senior project, or corporate, official of the company.
2. The Contractor must provide an SHPM for the duration of the contract. Notices posted at the project site shall name the SHPM and describe the authority and responsibility held by the position.
3. The SHPM must meet the following qualifications:
   a. Speaks English
   b. Completed advanced construction safety class.
   c. Five (5) years of experience as a safety manager on similar projects. The SHPM shall be qualified/cognizant to anticipate, identify evaluate, and implement corrective action through activity/worker hazard analysis, worker training, proactive oversight of construction operations to abate or reduce potential safety and health hazards and dangerous environmental exposures.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

A. For the duration of construction, the Contractor must implement and manage a comprehensive safety and health program covering both existing and developing conditions.

B. The PDE/Project Manager reserves the right to suspend work when and where the Contractor's safety and health program is operating in an inadequate manner, has severe shortcomings, or is not in compliance with contractual requirements. This will include failures to complete required submittals (such as AHAs) within the time periods specified.

C. Acceptance by the PDE/Project Manager will not relieve the Contractor of overall responsibility for compliance with the strict interpretation of all safety and health requirements of the Contract.

D. Safety and Health Regulations:

1. The contractor must meet all require Uganda and local health and safety rules and regulations and post these requirements at the project site.
2. The Contractor must establish and enforce clearly written, definitive rules for all employees and subcontractors at the project site for each unit of work.
3. The Contractor must prominently post notices in English, the local national language, and third country languages (as needed) indicating that failure to comply with safety and health regulations may cause immediate termination of employment.
4. The Contractor must post safety and health rules at the project site and provide a copy to the PDE/Project Manager for each subcontractor prior to the commencement of work.

E. A protocol mutually agreed upon by the Contractor and PDE/Project Manager shall be established for the removal of workers and supervisors from the site who repeatedly commit safety or behavioral violations.

F. Inspections

1. Identify safety and health issues and deficiencies. Actions, timetable, and responsibility for correcting the deficiencies, must be recorded in inspection reports. Conduct and document follow-up inspections to ensure correction of any identified deficiencies.

2. The SHPM must establish a safety and occupational health deficiency tracking system that lists and monitors the status of safety and health deficiencies in chronological order. The list must be updated daily, and must provide the following information:

   a. Date deficiency identified;
   b. Description of deficiency;
   c. Name of person responsible for correcting deficiency;
   d. Projected resolution date;
   e. Date actually resolved.

3. Using qualified personnel, the Contractor must conduct and document frequent safety, health, and housekeeping inspections of temporary structures, fabrication shops, machinery, and equipment at the project site. Documentation shall include information in paragraph 2 above.

G. Accident Investigation

1. The Contractor must investigate and prepare a separate accident report for each incident resulting in lost time, medical treatment beyond first aid, disabling or fatal injuries, or damage to vehicles, property, materials, supplies, furniture, fixtures, and equipment.
2. The Contractor must prepare reports on forms supplied by and in accordance with the instructions of the PDE/Project Manager.
3. In each report, the Contractor must include a statement of Contractor actions taken to

prevent recurrence.

H. Near Miss Reporting

1. The Contractor must establish a program to report and record, "near miss" incidents and unsafe acts that resulted or could have resulted in damage to equipment, machinery or property or had the effect of potentially causing an injury or fatality.
2. The Contractor must in a timely manner identify and investigate the root causes of each incident or unsafe act and follow up to prevent reoccurrence.
3. The Contractor must provide instruction to supervisors and workers on how to report "near miss" incidents and unsafe acts.
4. The Contractor must share near miss incidents and unsafe acts with all employees at the project site by informing them at weekly tool box meetings how the incident or unsafe act occurred and what actions are being taken to prevent reoccurrence.

I. Hazardous Materials: The Contractor must test any material encountered suspected to contain hazardous substances and bring to the immediate attention of the PDE/Project Manager. If, in the opinion of the PDE/Project Manager, the Contractor is not conducting sufficient testing, more may be required.

J. Protective Clothing and Equipment (PCE): The Contractor must issue personal protective clothing and equipment as required by EM 385-1-1. Leather boots, coveralls and high visibility vests must be worn by all employees engaged in construction work at the project site. All items (PCE) must be maintained in a serviceable condition.

K. Safety and Health Training:

1. General Orientation: The Contractor must provide an orientation for new employees regarding site safety, health policies and work rules.
2. Contractor must ensure that superintendents, supervisors and foremen know the safety and health requirements found in the applicable sections of the U.S. Army Corps of Engineers Safety & Health Requirements Manual EM 385-1-1, latest edition, that directly impact (affect) the work activity and workers they are supervising.
3. Specific Training:
   a. The Contractor must provide specific training to supervisory personnel and all workers of the Contractor and subcontractors regarding the proper use and care of specific personal protective gear, equipment, and clothing.
   b. The Contractor must provide specific fall arrest training by competent and qualified personnel regarding the proper use of the full body harness lanyard attachments and identification of secure anchorage points. This training shall be provided to all workers performing tasks at elevations above 10 feet.
   c. Contractor and subcontractor employees must be trained and supervised by persons qualified to perform, safely and confidently, recognized hazardous work operations and work performed under hazardous conditions.

L. Tool Box Meetings:

1. The Contractor must conduct weekly safety meetings.
2. The Contractor must require attendance by all workers, foremen, and supervisors at the project site, including those of separate contractors.
3. The Contractor must discuss current construction operations, analyze hazards, and communicate solutions.

3.02 CONSTRUCTION HEALTH AND SAFETY PLAN (HSP)

A. Prior to beginning work at the project site, the Contractor must prepare and submit to the PDE/Project Manager for approval, a site-specific HSP covering all construction activities for the Contractor and all subcontractors. The HSP must address the phasing and implementation of the complete safety, health, hygiene, and accident prevention program beginning with the first day of activity on the Site. Throughout the duration of the Project, the Contractor must follow the accepted HSP (or as revised with prior approval of the PDE/Project Manager).

B. The HSP must contain:

1. Management and Corporate Commitment: The Contractor must include a certified statement in the introduction, executed by a senior officer of the construction firm having broad corporate authority, indicating full commitment to the accepted CAPP and the level of authority in assignment of responsibilities at the project site.
2. Name, qualifications and duties of SHPM.
3. Concept of the Joint Health and Safety Committee, its makeup, and functions.
4. Requirements and details for conducting meetings and inspections.
5. Activity and Job/Position Hazard Analyses: The procedure for preparation and approval prior to proceeding with work involving unusual construction operations, work practices, or hazardous materials. The Contractor is encouraged to teach and assign site supervisors the responsibility to develop the AHAs and PHAs.
6. Hazardous Work Permits: The procedure for preparation and approval prior to proceeding with work deemed hazardous.
7. Safety and Health Training: The procedures for implementing training and orientation.
8. Fall Protection and Prevention Plan: The Contractor must incorporate into the CAPP a site specific Fall Protection and Prevention Plan for personnel exposed to fall hazards and use of proper fall protection equipment.
9. Emergency Plan: The Contractor must solicit advice and recommendations from the PDE/Project Manager in preparation of the Emergency plan to include:
    a. Escape procedures and routes, method of accounting for employees following emergency evacuation, identification of source and location for rescue and medical assistance, means of reporting emergencies, and persons to be contacted for information or clarification.
    b. Emergency Resources - Establish jointly with the Government, a list of telephone numbers and locations of ambulance, physician, hospital, fire, police, and other sources of emergency assistance. This list shall be posted conspicuously in several well trafficked locations on the project site.

c. Emergency communication-wireless telephone service shall be the preferred method of emergency communications. Emergency communication access shall be available to Site medical personnel and the nearby medical clinic or hospital.
d. Quarterly Testing - Coordinate with the COR for quarterly tests of the emergency plans using drills to ascertain and ensure effectiveness.
e. Integration of on-site emergency planning with off-site emergency support.
f. Limit the number of persons permitted in any location to rescue and escape capability, as determined by the Contractor and in concurrence with the COR.
g. Emergency Alert System - Identify, select, install, and test the system to alert all persons likely to be affected by existing or imminent disaster conditions, and to alert and summon personnel and equipment comprising emergency response capability.

3.03 TOOLS, EQUIPMENT, AND MACHINERY

A. Quality: Hand tools, power tools, equipment, machinery, materials, and personal protective apparatus utilized by the Contractor and all subcontractors must be of a manufacturer listed by a U.S. or internationally recognized testing laboratory for the specific application for which they are to be used. They must be quality products recognized for professional construction use, applications, and work practices.

B. Safe Clearance Procedure: Prior to initial use, and periodically thereafter at times of continued use, the Contractor must provide inspections of construction tools, equipment, and machinery. The Contractor must not permit continued use of tools, equipment, and machinery that are not in satisfactory working condition. Immediately upon identification of damage or malfunction, the items shall be tagged and removed from the project site. The Contractor must not allow the return of items until they have been repaired or reprocessed in compliance with industry practice. The Contractor must engage qualified persons to make such inspections and repairs. The Contractor must prepare written records, including recommendations for corrections of defects and misapplication.

C. Machinery and Mechanized Equipment:

1. Prior to use, all machinery and mechanized equipment must be inspected and tested by qualified personnel and certified to be in safe operating condition. Records of tests and inspections must be maintained at the project site and become part of the official Project file.
2. Mobile cranes, tower cranes, crawler cranes, truck mounted cranes, and material hoists must be erected, tested, maintained, and repaired in accordance with the manufacturer's recommendations. All such actions must be documented. Operators of vehicles and mechanized equipment must be trained and certified. Every person operating a motor vehicle must possess at all times, a license or permit certification that affirms valid qualifications for the equipment they will be operating. See Section 16 of the USACE manual for heavy mechanized equipment.
3. The Contractor must have tower cranes inspected quarterly by entities authorized by the manufacturer. The inspection must ensure operation and structural integrity in

accordance with manufacturer's recommendations (see EM 385-1-1, latest edition).

4. Hoisting Equipment: The Contractor must provide a general-use manufactured apparatus for hoisting and material handling that is suitable for project configuration. The equipment must be sufficient for the number of stories and the handling of materials, fabrications, tools, equipment, work platforms, and, the transportation of crafts persons between grade and floor levels (see EM 385-1-1, latest edition).

D. Electrical Work

1. As part of the contractor's project site Joint Safety and Health Committee the Contractor must establish an Electrical Subcommittee to provide qualified professional support to the projects electrical work. The objectives and responsibilities of the Electrical Subcommittee are to:
   a. Prevent electrical related injuries
   b. Implement proactive controls to guard against anticipated and potential hazards.
   c. Implement electrical safety training and electrical hazard awareness programs.
   d. Ensure compliance with US Army Corps of Engineers Safety & Health Requirements Manual EM385-1-1 November 2014 or latest editions) Section 11 "Electrical"
   e. Ensure that all temporary electrical equipment is installed, operated and maintained to eliminate electrical safety hazards.
   f. Ensure that electrical installations and electrical apparatus are installed and inspected by qualified electricians using approved equipment and PPE.
   g. Ensure that only qualified electricians who have been properly briefed on the work to be performed through an Activity Hazard Analysis, have the authorizations, permits and permissions to proceed under professional supervisory personnel.
   h. Not permit any energized work to be performed unless an Energized Work Permit has been initiated and approved accompanied by a detailed Activity Hazard Analysis (AHA) of the work to be performed. Only permit energized work under extraordinary circumstances and then only as a last resort. In addition, no person shall be required, against their will, to work on, in, or around any energized conditions.
   i. Provide and or initiate electrical safety training
   j. Ensure the effective oversight of temporary electrical service installations, maintenance and inspections.
   k. Establish, maintain, and review an effective Lock Out/ Tag Out Program
   l. Assess overall electrical safety performance on a quarterly basis thru audits, inspections, and reviews of electrical work permits, accidents and near misses.
   m. Maintain the records of qualified electricians, records of inspections, electrical energized work permits, AHA's, and Lock Out /Tag Out permits

E. Walking and Working Surfaces and Elevated Work:

1. Scaffolding:
   a. Must be a standard, medium to heavy-duty welded tubular frame or a project-designed steel tube and clamp system.
   b. All components of scaffolding must be manufactured and tested according to international standards and ANSI/ Scaffolding, Forming and Shoring Institute,

ANSI/SSFI SC 100 - 5/05 Nov 2017.

c. All types of manufactured scaffolding systems shall include the scaffold manufacturer's integrated access stairway sections, handrails, and walking platforms.
d. Components from different manufacturers shall not be interchanged or integrated within a given system.
e. Cast-in-place concrete installations of walls, columns, beams, and slabs:
    1) The Contractor must provide manufacturer's standard access scaffolding and work platforms which are an integral part of a pre-engineered, reusable, factory-built concrete forming and shoring system.
    2) The system must consist of pre-fabricated modular metal framed plywood or all metal panels.
    3) Components from different manufacturers must not be interchanged or integrated within a given system.

2. Fall Arrest Components:
    a. Harnesses with a twist style locking device are forbidden.
    b. The Contractor must provide harnesses with snap-hooks or carabiner that are self-closing, self-locking and capable of being opened by at least 2 consecutive deliberate actions per EM 385-1-1, paragraph 21.I.07.c.(1).

3. Floor Openings:
    a. The Contractor must protect openings in floor slabs of more than 0.03 square meters (46 square inches) in area.
    b. When located more than 1.25 meters (4 feet) above grade or adjoining floor or deck surface, the Contractor shall provide guardrails at floor slab edges that are not yet permanently walled off.

F. Access and Egress:

1. The Contractor must provide ramps, stairs, ladders, and similar devices for crafts persons, inspectors, authorized visitors, and PDE personnel for access and egress.
2. The use of job-made "portable" step ladders is prohibited. Contractors must provide commercially manufactured fiberglass stepladders that meet the American National Standards Institute (ANSI) Type II, Commercial 225- lb. duty rating.

G. Noise Reduction:

1. The Contractor must minimize the generation of noises through the efficient and shielded use of materials, tools, processes, and procedures.
2. The Contractor must restrict the use of noise or impact-producing tools.
3. The Contractor must use these and other actions to minimize complaints from nearby occupancies and comply with requests of local authorities.

3.04 SITE MAINTENANCE, PROTECTION, AND SANITATION

A. General: The Contractor must provide indirect, work-related, temporary support facilities

and services as described below in conjunction with performance of work at the project site.

1. The Contractor must comply with the host country governing regulations. These regulations include building codes, fire regulations, utility company requirements, health and safety regulations and environmental protection regulations.
2. Inspections: The Contractor must arrange for required inspections, certifications, and permits. The PDE/Project Manager must be kept informed of all actions.
3. The Contractor must maintain temporary facilities in clean, sanitary, and safe condition. The Contractor must not allow conditions to become overloaded, hazardous, or otherwise deleterious.

B. Fire Protection:

1. Where possible, the Contractor must arrange with the PDE/Project Manager and local fire department to respond to calls for assistance and service in cases of fire emergency.
2. The Contractor must provide temporary portable fire extinguishers, complying with applicable provisions of NFPA 10, Standard for Portable Fire Extinguishers, multi-purpose dry chemical type, 5.0 kg size, UL-rated "4-A:60-B:C." The Contractor must maintain unobstructed access to fire extinguishers at each prime point of access to each story of construction and at each principal office, lunchroom, fabrication shop, storage enclosure, gate, guard house, and similar temporary facility at the project site.
3. The Contractor must prohibit smoking, except in designated areas identified by the PDE/Project Manager.
4. During welding, cutting, burning and other hot work, the Contractor must comply with NFPA 51B in areas of fire-hazard exposure. The Contractor must provide stand-by fire-protection personnel and adequate supervision of operations.

C. First Aid Medical Facility Requirements:

1. The Contractor must provide a first aid kit for every 25 (or fewer) employees. A health care professional or competent first aid person must evaluate and determine the fill contents of each kit.
2. The Contractor must provide, place, and test periodically one (1) Automatic External Defibrillator (AED) in the project site. A CPR/AED training program must be given by competent and qualified individuals to two (1) persons at each location who shall receive certification in first aid and CPR from from an organization whose training adheres to the standards of the International Liaison Committee on Resuscitation. CPR/AED training shall contain a hands-on component. A certificate must state the date of issue and length of validity.

D. Barricades, Closures, and Traffic Control:

1. The Contractor must provide substantial barricade-type closures and guard rails at locations where encroachment of a physically hazardous condition in construction is possible. The closures and guard rails must protect equipment, tradespersons, and others

at or adjoining the project site.
2. The Contractor must provide a sidewalk bridge-type protective structure where vehicular and pedestrian traffic cannot be excluded from hazardous areas under and nearby overhead work in progress.
3. The Contractor must provide appropriate warning signs, flashing warning lights, and adequate general lighting at barricades. The barricades are not intended to be crash-proof.
4. The Contractor must maintain barricades through periods of exposure to hazardous conditions.

E. Roadways, Walkways and Parking:

1. The Contractor must establish safe roadways and walkways in and around the project site and connecting adjoining public thoroughfares.
2. The Contractor must provide signage and other markings including traffic control signage and signals as necessary and useful in controlling and restricting traffic from passing through other areas of the project site. The Contractor shall cooperate with local officials in the establishment and adjustments of street entrance and exit signals and signs.
3. The Contractor must not allow established traffic passages to become encumbered or obstructed with work activities, materials, parked vehicles, equipment, and similar elements. In particular, the Contractor shall keep established entrance and exit passages clear for medical emergencies, escape, fire fighting, and other emergency access and egress.
4. Parking: Privately owned vehicles are prohibited from entering the construction site or interfering with construction activities.

F. Environmental Protection:

1. The Contractor must provide facilities and services as required by governing authorities to protect the environment.
2. The Contractor must minimize the accumulation of wastes and avoid environmental pollution.
3. The Contractor must prohibit the discharging and accidental loss of substances from the construction process that could contaminate the atmosphere, surface or ground water, soil, or subsoil.

G. Excavation and Demolition:

1. Prior to commencement of excavation or demolition, the Contractor must give notices to adjoining landowners, Park Authorities or other parties as required.
2. The Contractor must review and comply with EM 385-1-1 Section 23 “Demolition”.
3. Before excavation or demolition, the Contractor must examine the structural condition of all adjacent structures or infrastructure, on-site and on adjoining property. Where there is reason to believe planned excavation or demolition shall cause damage to adjacent reserved areas, structures or infrastructure or result in unsafe conditions, the Contractor must cease excavation or demolition operations until means have been provided to insure stability and safety. Such means may consist of sheet piling, shoring, bracing,

underpinning, or the equivalent.
4. Other protective provisions may include, at a minimum, temporary protective coverings or enclosures of adjoining work, warning signs, and similar provisions.

H. Dust Control:

1. The Contractor must implement a suitable dust control program in and around the project site, designed to reduce dust generation and distribution to reasonable levels. This program must be coordinated with the environmental protection program.

I. Rodent, Pest, and Vermin Control:

1. The Contractor must employ integrated pest management practices that emphasize avoiding conditions that attract pests to eliminate or minimize pest problems at project site.
2. Eliminate habitats of existing pests and avoid creation of pests common to the area.
3. Use the least hazardous means to reduce pest populations.
4. When pesticides are needed, use only pesticides approved by PDE/Project Manager and local authorities, and apply them in a targeted manner. Provide pesticide labels and material safety and data sheets for review and approval at least 72 hours prior to planned application on the site.

J. Potable Water:

1. Where reasonably possible, the Contractor must provide potable water for all requirements of the construction period. Where and when that is not possible, potable water for drinking and other uses shall be provided where specified. Potable water supplies shall be clearly marked with signage in multiple languages as appropriate for the Site location. The Contractor must source potable water from city-controlled piped water, a well on-site, commercially bottled water, or other reliable source. The Contractor must test and report on a monthly basis that the potable water from all selected sources is safe for human consumption. Piping of temporary potable water systems shall be sterilized prior to use.

K. Construction Site Sanitation and Health Facilities:

1. Facilities for workers must be completed and ready to use prior to the work beginning on site.
2. The Contractor is encouraged to utilize semi-permanent or portable facilities where possible in compliance with the requirements of this Section.
3. The Contractor must provide a shaded lunch area.
4. Toilet Facilities:
   a. The Contractor must provide separate facilities for each sex, as required.
   b. As practicable, locate toilet facilities within a reasonable of all locations where work is regularly being performed.
   c. Design the number of toilet fixtures around the anticipated maximum number of

workers at the project site and allow accessibility to all employees.

d. The construction and installation of toilet facilities shall be acceptable to the PDE/Project Manager and must be in compliance with applicable jurisdictional codes.
e. The Contractor must ensure that the type of toilet and water access (e.g., commode vs. squat toilet) is culturally acceptable to the workforce.
f. Each toilet or commode must occupy a separate compartment or stall equipped with a door and latch.
g. Install toilet fixtures, commodes, and urinals such that the space around and behind the fixture can be easily cleaned.
h. Label facilities properly in English and the commonly understood local language. Pictograms shall be used.
i. Provide hand-washing lavatories in close proximity to all toilet facilities
j. Maintain an adequate supply of toilet paper and paper towels at all times.
k. Comply with the requirements of the authority having jurisdiction for sewage disposal. Where non-sewer waste disposal systems are permitted, they must be of a type accepted by the local health authorities having jurisdiction. Maintain all disposal systems in a sanitary condition.

5. Drinking Fountains and Dispensers:

a. The Contractor must provide an adequate number distributed around the project site and service support areas for convenience and efficiency. An adequate supply of sanitary disposable paper cups and waste receptacles shall be maintained at each water dispenser.
b. The Contractor must provide bottled drinking water where piped potable water service is not available.

6. Waste Handling and Janitorial Services:

a. The Contractor must provide proper and adequate segregated waste containers for the collection and removal of waste materials in different categories. These categories include, but are not limited to, hazardous wastes, flammable wastes, sanitary and health-care wastes, garbage, wastes for recycling as required by local authorities, inert and dry wastes, and incidental debris from the construction process.
b. The Contractor must dispose of general non-organic wastes at maximum seven (7) day intervals.
c. The Contractor must dispose of organic, garbage, and similar temperature-sensitive wastes at maximum three (3) day intervals when the average outdoor daily maximum temperature can be expected to be above 18°C.
d. The Contractor must clean waste containers regularly and adequately.
e. The Contractor must dispose of wastes in a lawful manner.
f. The Contractor must maintain a Site clean and clear of accumulated wastes, including surplus materials, trimmings, incidental demolished work, and construction debris. The Contractor must clean completed elements and portions of work and maintain in broom-clean condition.
g. Janitorial Services:

1) The Contractor must provide on a daily basis, including restocking of disposable products, for the maintenance of temporary offices, security spaces, toilets, first aid rooms, lunch areas, and similar facilities.
2) Toilet and first aid room fixtures and floors and floors and walls of shower rooms shall be scrubbed daily.
3) The Contractor must provide weekly cleaning, damp mopping, or vacuuming for other floors, as applicable.
4) The Contractor must provide monthly washing of windows and cleaning of other walls, ceilings, light fixtures, and similar facility surfaces.
5) The Contractor must extend janitorial services to include permanent facilities as authorized for use at temporary facilities.

END OF SECTION

ENVIRONMENTAL AND SOCIAL

PART 1 GENERAL

1.01 SUMMARY

A. This Section specifies Contractor responsibilities for providing environmental and social management policies at the site during construction. The Contractor is responsible for ensuring subcontractor compliance with the environmental requirements contained in this specification and those required by local laws, rules and regulations.

1.08 RELATED DOCUMENTS

A. Other general conditions and special conditions of the Contract by reference or as amended in Contract conditions and other sections of these Contract Specifications apply to requirements of this Section.
B. Volume 3.2 EMMP applies to this section

1.09 DEFINITIONS and ACRONYMS

A. General

1. EMMP – Environmental Mitigation and Monitoring Plan

1.10 SUBMITTALS

A. Must be submitted, reviewed, and accepted by the PDE-Project Manager in accordance with the requirements of the Contract.

B. Must be certified by the Contractor.

C. Submit the following as prescribed above:

1. Environmental Plan
   a. To PDE within 14 days following the Contract Award. This will include a narrative and a response table based upon the requirements defined in the EMMP. The narrative will respond to all the elements described below.

2. Gender Plan
   a. To PDE within 14 days following the Contract Award based upon provided template. The narrative will respond to all the elements described below.

D. If the Contractor does not submit acceptable plans within the times prescribed above, the PDE may withhold funds from progress payments.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 Environmental Plan

A. The Contractor will ensure that construction activities adhere to the construction mitigation measures defined in the EMMP and clearly defined in the Contractor's Environmental Plan. At a minimum the Environmental Plan will include the following:
   i) Environmental Permitting (if applicable)
   ii) No-go areas delineated to protect mammals and workers
   iii) Off-limit work hours to protect wildlife and workers
   iv) Speed limits in construction areas
   v) Noise limits in construction areas
   vi) Fire protocols
   vii) Waste protocols
   viii) Alien invasive plant protocol
   ix) Chance Finds Procedures

3.02 Gender Plan

A. The Gender plan will be done in accordance with the contract general and special conditions. It will include at a minimum:
   i) Sexual Harassment Reporting/Redress Procedures
   ii) Sexual Harassment Policy

END OF SECTION