TECHNICAL

PART 6 - Construction Plan: Tenderers shall develop and submit a narrative and general sequence of construction approaches for the components of the overall design and construction program described herein. The narrative shall explain the sequence and intent of the [A15]Tenderer for construction of the components of the Works.[A15] The three components mentioned in section C are to be displayed separately in an overall programme with all interface dependencies; anticipated durations; bases for estimate for durations (including numbers and types of equipment, production rates, and calendar and shifts applicable to the activity); and sequence overlaps shown in a time-scaled precedence format. Specific elements of the sequences are identified within the three components with the objective of this part being a general communication of the Tenderer's intent relative to the integration of design, the lock excavation, lock construction, approach-channel excavation, approach-channel dredging, and dam construction associated with each of the lock complexes.

A. [A19]**Mobilization/Construction Operations/Demobilization Plan.**[A19] Tenderers shall:

1. [A19]Develop and submit a mobilization/construction operations/demobilization plan describing and showing the evolution, operations, and closure of the site at key stages of the work at each Site, Atlantic and Pacific.[A19] The plan will display, at a minimum:

    a. Project office.
    b. First aid facilities.
    c. Sanitary facilities.
    d. Security and access control facilities, including fencing.
    e. Parking.
    f. Access roads.
    g. Temporary utilities configuration.
    h. Rock crusher location(s).
    i. Concrete batch plant location(s).
    j. Cement storage.
    k. Haul roads as they are initially developed and as they change throughout the life of the project.
    l. Material distribution layouts and plans.
    m. Material storage areas and/or facilities.
    n. Cofferdams.
    o. Storm-water management controls and detention pond locations.
    p. Treatment facilities.
    q. Fuel storage and containment areas.
    r. Wash-down areas.
    s. Concrete spoil area(s).
    t. Tower and/or gantry crane locations.
    u. Docking facilities.
    v. Vehicle/equipment maintenance areas and facilities.
    w. Reinforcing steel assembly areas.
    x. Hazardous material storage and containment areas.
    y. Storage bunkers for explosives.
    z. Limits of construction.
    aa. Interface points with other work.

    The plan shall show how the Tenderer intends to manage the Site throughout the progress of the work, to include addressing transportation to and within the Site, personnel-management facilities, and logistics-management facilities. Tenderers shall include a narrative explaining the logic behind the plan. [A19]The content of this Section shall include Site plans/drawings on E-size sheets, as needed, to effectively communicate the layout, as well as a narrative not to exceed 2,400 words or four pages of text, whichever is the lesser. Drawings, site plans, and charts do not apply against the page or word count.[A19]

2. Develop and submit a preliminary plan for mitigating the environmental impact of the Works as it relates specifically to the impact to the area as a result of the construction. Included in the plan shall be issues such as dust generation along existing access roads that are adjacent to residential areas, noise control and mitigation, maintenance and repair of surrounding roads that may suffer

damage as a result of construction logistics activity, health and sanitation management that will be required due to the large influx of people to the immediate project area, garbage and refuse disposal associated with the project, and any additional applicable information relevant to the evaluation committee's understanding of the Tenderer's approach to minimizing and mitigating the impact on the existing conditions surrounding the project area. [A19]The content of this subsection is not to exceed 1,800 words or three pages, whichever is the lesser.[A19] Organizational charts and programmes do not apply against the page or word count.

B. **Construction Organization.** [A19]Tenderers shall show and describe in an integral and comprehensive way their proposed construction and execution organization, their functional staffing and the hierarchical management, communication and control relationships of the varied units and as they may change along the project on a yearly basis. Indicate clearly which functions and work would be under the responsibility of which unit, and if the unit is a Consortia Member or a Subcontractor. Show the various unit locations (both offshore and in Panama), and the roles and responsibilities and deployment locations of the units. Also to be indicated within the organization is the Tenderer's planned or anticipated proportion, in terms of cost relative to the Total Tender Price, between subcontracted work and work directly executed by the Consortia itself or by Consortia Members. Indicate which trades, functions, services, disciplines or components are needed for the Works. Identification or naming in the Tender of a specific Subcontractor or supplier does not constitute approval by the Employer in the event of a successful Tender. The narrative content of this subsection is not to exceed 1,800 words or three pages, whichever is less. Complementary information (e.g., organization charts) shall be done on no more than 5 sheets of 11 by 17 inches.[A19]

C. **Programme.** [A19]Tenderers will depict through narratives, drawings, schedules, and charts, their proposed programme to accomplish the construction packages of the Works. The Tenderer's Tender Programme shall be prepared in accordance with Section 01 31 00 (*Project Management and Coordination*) and shall be submitted with the Tender as a .xer file on portable storage media in addition to the printed copies. The Tender Programme will include the Milestones set out in Sub-Clause 8.3 of the Conditions of Contract and provide applicable Milestone Dates (including construction milestones). The Tender Programme shall not include cost information, since all cost information shall be only in the Tenderer's price proposal. The Tender Programme shall address, at a minimum, the following items.[A19]

1. Tenderers shall identify the activities and logic relationships for:

   a. Design completion milestones;
   b. Mobilization;
   c. Site preparation activities;
   d. Provision of construction utilities (air, water, and power);
   e. Temporary construction (e.g., cofferdams, batch plants, processing facilities, silos, docks, conveyors, berms, dikes, railways, loading docks/facilities) and its removal;
   f. Dewatering;
   g. General excavation activities (differentiate wet and dry excavation);
   h. Drilling and blasting;
   i. Rock excavation (differentiating between wet or dry conditions);
   j. Conduit construction;
   k. Chamber bottom construction and approach bottom construction, as applicable;
   l. Approach structure construction;
   m. Chamber wall construction, including forming and placing methods;

n. Gate recess and valve chamber construction, including forming and placing methods;

o. Backfilling activities;

p. Water-Saving Basin construction;

q. Dam construction;

r. Gate installation;

s. Valve installation;

t. Power system and controls installation;

u. Buildings; and

v. Plug removal

[A19]In addition to the programme, the content of this subsection shall include a narrative not to exceed 2,400 words or four pages of text, whichever is less. Drawings, programmes, schedules, and charts in E-size sheets do not apply against the page or word count.[A19]

2. [A19]For the excavation of the locks, dams and approach channels, Tenderers shall also provide an accompanying narrative that:[A19]

   a. Provides a brief description of the equipment that will be used,

   b. Explains how the dry excavation will be sequenced (i.e., cut/fill plan),

   c. Explains the dredging sequence(s),

   d. Provides a preliminary blasting plan which outlines the key factors to be considered and the procedures to be implemented for effective blast control,

   e. Discusses haul road maintenance requirements and procedures,

   f. Addresses the utilization or disposal of the excavated material. Identify the type of excavated material that will be used on the project and explain where the material will be used. Also explain if the material will be utilized directly from the excavation, if it must be stockpiled, and/or if it must be processed.

   g. [A19]Provide descriptive method of dewatering and maintaining work areas free of standing water.[A19]

   [A19]The content of this subsection shall include a narrative not to exceed 2,400 words or four pages of text, whichever is less. Drawings, schedules, and charts do not apply against the page or word count.[A19]

3. For the concrete work, Tenderers shall also provide a narrative that explains whether the concrete to be placed in the Works will be batched at the Site or purchased. If purchased, the Tenderer shall identify the eligible suppliers and present the basis of evaluating the supplier's ability to deliver the quantity and quality of concrete required. If on-site batching is to be done, the Tenderer shall:

   a. Address whether it will be performed by the Tenderer, subcontracted, or a combination of the two. [A17]If subcontracted work or purchased services are involved, the Tenderer shall identify the eligible Subcontractors, including vendors, or other potential participants and the corresponding scope of work.[A17]

   b. Identify the source of all component Materials and how each component will be transported to and within the site, offloaded from the respective transport vehicle, and stored.

   c. [A19]Describe concrete forming and placement methodologies anticipated for execution of the Works.[A19]

[A19]The content of this subsection shall include a narrative not to exceed 2,400 words or four pages of text, whichever is less.[A19] Drawings, schedules, and charts do not apply against the page or word count.

4. [A19]For each dam or temporary water-retaining structure to be designed and constructed, the Tenderer shall also provide a narrative that:[A19]

   a. Addresses whether the construction will be performed by the Tenderer, subcontracted, or a combination of the two. [A17]If subcontracted work or purchased services are involved, the Tenderer shall identify the eligible Subcontractors, including vendors, or other proposed entities and their corresponding scope of work.[A17]

   b. Identifies the planned source of all component materials and how each component will be transported to the Site, offloaded from the respective transport vehicle, and stored.

   [A19]The content of this subsection shall include a narrative not to exceed 2,400 words or four pages of text, whichever is less. Drawings, schedules, and charts do not apply against the page or word count.

D. **Construction Quality Control.** Tenderers shall:

1. [A19]Provide the proposed quality-management organization for the construction of the Atlantic and Pacific lock complexes. Include a narrative of roles and responsibilities, key positions, support staff, technical and subcontracted activities. The content of this narrative shall not exceed 2,400 words or four pages of text, whichever is less. Organizational charts do not apply against the word or page count.[A19]

2. [A19]Provide an outline of the proposed quality-control (QC) plan for construction of the Atlantic and Pacific lock complexes. The plan outlines shall reflect the requirements as cited in Specification Section 01 40 00 (*Quality Requirements*), and shall, at a minimum, address excavation, dams, foundation preparation, structural concrete foundations and walls, backfill, mechanical systems, gates, valves, operational buildings, and power and control systems. The content of this subsection shall include a narrative not to exceed 3,000 words or five pages of text, whichever is less.[A19]

3. Address the use of construction and installation quality plans (CIQPs) and inspection and test plans (ITPs) for the lock gates. [A19]Tenderers shall provide a sample CIQP and ITP that respectively demonstrate the quality assurance, inspection, and testing programs proposed for this Contract as related specifically to the gates.[A19] Non-destructive testing (NDT) procedures shall be clearly outlined in the sample ITP. [A19]Also to be included in this subsection shall be the Tenderer's proposed method for loading, transporting, offloading, and storing/staging the gates. The narrative content of this subsection shall not exceed 1,200 words or two pages of text, whichever is less. The sample CIQP and ITP do not count against the word or page count.[A19]

4. Address the use of construction and installation quality plans (CIQPs) and inspection and test plans (ITPs) for the valves. [A19]Tenderers shall provide a sample CIQP and ITP that respectively demonstrate the quality assurance, inspection and testing programs proposed for this Contract as related specifically to the valves. NDT procedures shall be clearly outlined in the sample ITP. Tenderers shall indicate their proposed method for loading, transporting, offloading, and storing/staging the valves. The narrative content of this subsection shall not exceed 1,200 words or two pages of text, whichever is less. The sample CIQP and ITP do not count against the word or page count.[A19]

END OF SECTION