

**ANNEX "A"****DETAILED ENGINEERING FOR THE PROCUREMENT OF INFRASTRUCTURE PROJECTS**

1. Detailed engineering shall proceed only on the basis of the feasibility or preliminary engineering study made which establishes the technical viability of the project and conformance to land use and zoning guidelines prescribed by existing laws. The findings contained in the feasibility study, if undertaken for the project, shall be examined. If, in the course of this exercise, it is found that changes would be desirable in the design standards of principal features, as proposed, specific recommendations for such changes shall be supported by detailed justifications, including their effects on the cost, and (if necessary) the economic justification.

2. A schedule of detailed engineering activities shall include the following:

- a) Survey
- b) Site Investigation
- c) Soils and Foundation Investigation
- d) Construction Materials Investigation
- e) Preparation of Design Plans
- f) Preparation of Technical Specifications
- g) Preparation of Quantity and Cost Estimates
- h) Preparation of Program of Work
- i) Preparation of Proposed Construction Schedule (and estimated Cash Flow for projects with Schedule over Six (6) Months)
- j) Preparation of Site or Right-of-Way Plans including Schedule of Acquisition
- k) Preparation of Utility Relocation Plan
- l) Preparation and Submission of Design Report
- m) Environmental Impact Statement for critical project as defined by the Department of Environment and Natural Resources (DENR)
- n) Preparation of minimum requirements for a Construction Safety and Health Program for the project being considered
- o) Preparation of Bid/Tender Documents

3. Work under detailed engineering shall include, but not necessarily be limited to, the following:

- a) Design Standards – Design standards shall be in accordance with appropriate standards and accepted detailed engineering practice adopted by the agency concerned. Design standards for structures shall take into account, among other things, the seismicity of the area to determine the optimum safety of structures and to minimize possible earthquake damage.
  - b) Field Surveys And Investigations – Necessary field surveys and investigations which may include aerial, hydrographic, topographic, hydrologic, sub-surface, monumenting and other surveys shall be carried out in accordance with the design guidelines, criteria and standards adopted by the agency concerned. All survey and investigation works shall be prepared in a manner satisfactory to carry out accurate design and production of plans.
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- c) Contract Plans – The following plans shall be prepared for each construction contract in accordance with guidelines and standards adopted by the procuring entity concerned, incorporating at least the following:
- (i) Site development plan
  - (ii) Plans and profile sheet
  - (iii) Typical sections and details
  - (iv) Drainage details where applicable
  - (v) Structural plans at appropriate scales indicating all details necessary in order that the complete structure can be set out and constructed
  - (vi) Other details which may be required by the head of the agency
- d) Quantities – All construction quantities shall be computed to a reasonable accuracy of plus or minus ten percent (10%).
- e) Special Provisions – Specifications shall be prepared for specific terms of work or methods of construction, measurement and payment under each contract, which are not covered by Standard Construction and Material Specifications adopted by the procuring entity concerned.
- f) Unit Prices – These shall be prepared for each contract using costs based on reasonable approved current prices as projected over the proposed construction period, divided into local and foreign exchange costs, as the case may be.
- g) Approved Budget for the Contract – the approved budget for the contract to be bid shall be prepared by official(s) duly designated by the head of the procuring entity concerned or by his duly authorized official. It shall be approved by the head of the procuring entity or his duly designated official.
- Since the contracts are fixed price contracts, the approved budget for the contract to be bid shall provide for the projected movements of construction costs over the construction period considering the projected inflation and foreign exchange rates as issued by the Development Budget Coordination Committee (DBCC). It shall also show the local and foreign currency requirements, as the case may be.
- The approved budget for the contract to be bid shall specify for each major work item, such as earthwork, roadwork, and massive concreting, the components for equipment rentals, fuel, labor, materials and overhead, including the cost of the approved construction safety and health program and warranty premium.
- j) Bidding Documents as provided for in the IRR.
- k) Program of Work – Before prosecuting any project, the necessary program of work shall be prepared and submitted for approval. In no case shall construction funds be remitted to field offices or construction work on a project be started before the program of work is approved, in accordance with existing laws.

No program of work for any project shall be approved without detailed engineering.

The program of work shall include, among other things, estimates of the work, items, quantities and costs and a PERT/CPM network of the project activities. The program of work shall cover at least a usable portion of the project and no construction shall be started for portions of the project that are less than usable, except projects requiring stage construction, in which case continuity of construction up to the completion of a usable portion must be assured.

- l) In the preparation of the bidding documents, the agency shall make an estimate of the actual number of working days required to complete the project through PERT/CPM analysis of the project activities and corrected for holidays and weekends. Likewise, the agency shall make an estimate of the number of rainy/unworkable days considered unfavorable for the prosecution of the works at the site, which shall be indicated in the tender documents, and incorporate the same in the corrected actual number of working days determined above, and shall be made the basis of the total contract time. The estimated number of rainy/unworkable days considered unfavorable for the prosecution of the works at the site shall be made known before the date of bidding through the Instructions to Bidders for the purpose of guiding both the government and winning contractors in the request for an approval of time extensions. Without the estimated number of rainy/unworkable days established before the bidding date and known to all participating bidders, the contract time is presumed to have excluded the unfavorable conditions.
- m) Likewise, the bidding documents shall specify the type of project and the corresponding warranty period required by the procuring entity.

4. The above rules shall apply to the implementation of infrastructure projects under normal or ordinary conditions. However, under emergency or extraordinary cases involving major calamities and disasters as declared by the President where time is of the essence to save lives and properties and restore damaged infrastructures, detailed engineering works shall be conducted in accordance with the guidelines and procedures, as prescribed by the head of the appropriate infrastructure agency and approved by the Infrastructure Committee of the National Economic and Development Authority Board, to enable quick response to said cases, while maintaining the safety and integrity of the structure.