# PHILIPPINE BIDDING DOCUMENTS

# Construction of New Clark City Connecting Road to Industrial Park

Public Bidding No. 20-038-1

FIFTH EDITION AUGUST 2016

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## List of Acronyms

1.	ABC	Approved Budget for the Contract
2.	BAC	Bids and Awards Committee
3.	BCDA	Bases Conversion and Development Authority
4.	BDS	Bid Data Sheet
5.	BIR	Bureau of Internal Revenue
6.	BOQ	Bill of Quantities
7.	BSP	BangkoSentralngPilipinas
8.	CDA	Cooperative Development Authority
9.	CLC	Credit Line Commitment
10.	CPES	Constructors Performance Evaluation System
11.	CTRC	Contract Termination Review Committee
12.	DPWH	Department of Public Works and Highways
13.	DTI	Department of Trade and Industry
14.	EFPS	Electronic Filing and Payment System
15.	GCC	General Conditions of the Contract
16.	GOP	Government of the Philippines
17.	GPPB	Government Procurement Policy Board
18.	IRR	Implementing Rules and Regulations
19.	ITB	Instructions to Bidders
20.	JV	Joint Venture
21.	JVA	Joint Venture Agreement
22.	LCB	Lowest Calculated Bid
23.	LCRB	Lowest Calculated and Responsive Bid
24.	LGU	Local Government Unit
25.	NFCC	Net Financial Contracting Capacity
26.	NTP	Notice to Proceed
27.	PCAB	Philippine Contractors Accreditation Board
28.	PERT/CPM	Project Evaluation Review Technique/Critical Path Method
29.	PhilGEPS	Philippine Government Electronic Procurement System
30.	PMO	Project Management Office or end-user unit.
31.	RA	Republic Act
32.	SCC	Special Conditions of the Contract
33.	SEC	Securities and Exchange Commission
34.	TWG	Technical Working Group
35.	DUPA	Detailed Unit Price Analysis
36.	VAT	Value-Added Tax

# **SECTION I**

**Invitation to Bid** 

# Invitation to Bid

#### for the

### CONSTRUCTION OF NEW CLARK CITY CONNECTING ROAD TO INDUSTRIAL PARK

### New Clark City, Capas, Tarlac

### Public Bidding No. 20-038-1

1. The Bases Conversion and Development Authority (BCDA) and th Procurement Service – Department of Budget and Management (PS-DBM), through the General Appropriations Act FY 2020 intend to apply the sum being the Approved Budget for the Contract to payment under the contract for the following:

Qty.	Item / Description	Approved Budget for the contract	Delivery Period
1 Lot	Construction of New Clark City Connecting Road to Industrial Park	Php2,209,817,035.79 i <u>nclusive of all</u> applicable taxes and <u>fees</u>	The Intended Completion Date is within Seven Hundred Twenty (720) Calendar Days, upon receipt by the contractor of the Notice to Proceed.

Bids received in excess of the ABC shall be automatically rejected at bid opening.

2. The PS-DBM and BCDA now invite PhilGEPS registered contractors with valid and current Philippine Contractors Accreditation Board (PCAB) License of at least Category "AAA" and classification "Large B" for General Engineering (GE-1).

Bidders should have completed a contract similar to the Project equivalent to at least fifty (50%) of the ABC. The description of an eligible bidder is contained in the Bidding Documents, particularly in Clause 5. of Section II. Instructions to Bidders. For purposes of this project, similar contracts shall refer to the contracts involving Construction of Roads and/or Bridge Projects.

3. Bidding will be conducted through open competitive bidding procedures using nondiscretionary "pass/fail" criterion as specified in the 2016 Revised Implementing Rules and Regulations (IRR) of Republic Act 9184 (RA 9184), otherwise known as the "Government Procurement Reform Act."

Bidding is restricted to Filipino citizens/sole proprietorships, cooperatives, and partnerships or organizations with at least sixty percent (60%) interest or outstanding capital stock belonging to citizens of the Philippines.

- 4. Interested bidders may obtain further information from *Procurement Service* and inspect the Bidding Documents at the address given below from 8:00 AM to 5:00 PM.
- 5. A complete set of Bidding Documents may be acquired by interested Bidders from the address below and upon payment of the applicable fee for the Bidding Documents in the amount as follows:

Qty.	Item / Description	Amount of Bid Documents		
1 Lot	Construction of New Clark City Connecting Road to Industrial Park	Php75,000.00		

It may also be downloaded free of charge from the website of the Philippine Government Electronic Procurement System (PhilGEPS), provided that bidders shall pay the applicable fee for the Bidding Documents not later than the submission of their bids.

6. The schedule of bidding activities is as follows:

ACTIVITIES	SCHEDULE	VENUE
Advertisement/Posting of Invitation to Bid	October 21, 2020	PhilGEPS website, PS website, and at any conspicuous place reserved for this purpose in the premises of PS.
Issuance and Availability of Bid Documents	October 21, 2020	PS Cashier and PhilGEPS website
Site Inspection	October 27, 2020; 10:00AM	New Clark City, Tarlac Look for Engr. Marvin Carreon
Pre-Bid Conference	October 28, 2020	PS Conference Room, Cristobal St., Paco,Manila
Last day of Submission of Written Clarifications	November 17, 2020	PS Main Office Cristobal St., Paco,Manila or email at mgalang@ps-philgeps.gov.ph
Last day of Issuance of Supplemental Bid Bulletin	November 20, 2020	PhilGEPS website, PS website, PS bulletin board
Deadline of Submission and Receipt of Bids	November 27, 2020: 10:00AM	PS Conference Room, Cristobal St., Paco,Manila
Opening of Bids	Immediately after opening of bids	PS Conference Room, Cristobal St., Paco,Manila

 Bids must be duly received by the Bids and Awards Committee I (BAC I) Secretariat of the Procurement Service at the address below on or before 10:00AM – November 27, 2020. All bids must be accompanied by a bid security in any of the acceptable forms and in the amount stated in ITB Clause 18.

The bidders or their duly authorized representatives may attend the opening of bids. Late bids shall not be accepted.

8. The *Procurement Service* reserves the right to reject any and all bids, declare a failure of bidding, or not award the contract at any time prior to contract award in accordance with Section 41 of RA 9184 and its 2016 IRR, without thereby incurring any liability to the affected bidder or bidders.

 For further information, please refer to: Bids and Awards Committee I (BAC I) Secretariat Procurement Service-DBM RR Road, Cristobal St., Paco, Manila Tel: 8 290 6300 or 8 290 6400 mgalang@ps-philgeps.gov.ph

> (SGD) **DICKSON PANTI** Chairperson Bids and Awards Committee I

# **SECTION II**

**Instructions to Bidders** 

#### A. General

#### 1. Scope of Bid

- 1.1. The Procuring Entity named in the **<u>BDS</u>**, invites bids for the construction of Works, as described in Section VI. Specifications.
- 1.2. The name, identification, and number of lots specific to this bidding are provided in the <u>BDS</u>. The contracting strategy and basis of evaluation of lots is described in **ITB** Clause 27.
- 1.3. The successful Bidder will be expected to complete the Works by the intended completion date specified in **SCC** Clause 1.17.

#### 12. Source of Funds

The Procuring Entity has a budget or received funds from the Funding Source named in the **BDS**, and in the amount indicated in the **BDS**. It intends to apply part of the funds received for the Project, as defined in the **BDS**, to cover eligible payments under the Contract for the Works.

#### 13. Corrupt, Fraudulent, Collusive, Coercive and ObstructivePractices

- 3.1. Unless otherwise specified in the <u>BDS</u>, the Procuring Entity, as well as bidders and contractors, shall observe the highest standard of ethics during the procurement and execution of the contract. In pursuance of this policy, the Funding Source:
  - (a) defines, for purposes of this provision, the terms set forth below as follows:
    - (i) "corrupt practice" means behavior on the part of officials in the public or private sectors by which they improperly and unlawfully enrich themselves, others, or induce others to do so, by misusing the position in which they are placed, and includes the offering, giving, receiving, or soliciting of anything of value to influence the action of any such official in the procurement process or in contract execution; entering, on behalf of the Procuring Entity, into any contract or transaction manifestly and grossly disadvantageous to the same, whether or not the public officer profited or will profit thereby, and similar acts as provided in Republic Act 3019;
    - (ii) "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Procuring Entity, and includes collusive practices among Bidders (prior to or after Bid submission) designed to establish bid prices at artificial, non-competitive levels and to deprive the Procuring Entity of the benefits of free and open competition;
    - (iii) "collusive practices" means a scheme or arrangement between two or more Bidders, with or without the knowledge of the Procuring Entity,

designed to establish bid prices at artificial, non-competitive levels; and

- (iv) "coercive practices" means harming or threatening to harm, directly or indirectly, persons, or their property to influence their participation in a procurement process, or affect the execution of a contract;
- (v) "obstructive practice" is
  - (aa) deliberately destroying, falsifying, altering or concealing of evidence material to an administrative proceedings or investigation or making false statements to investigators in order to materially impede an administrative proceedings or investigation of the Procuring Entity or any foreign government/foreign or international financing institution into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the administrative proceedings or investigation; or
  - (bb) acts intended to materially impede the exercise of the inspection and audit rights of the Procuring Entity or any foreign government/foreign or international financing institution herein.
- (b) will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the Contract; and
- (c) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded Contract funded by the Funding Source if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing or, or in executing, a Contract funded by the Funding Source.
- 3.2. Further, the Procuring Entity will seek to impose the maximum civil, administrative, and/or criminal penalties available under the applicable laws on individuals and organizations deemed to be involved in any of the practices mentioned in **ITB** Clause 3.1(a).
- 3.3. Furthermore, the Funding Source and the Procuring Entity reserve the right to inspect and audit records and accounts of a contractor in the bidding for and performance of a contract themselves or through independent auditors as reflected in the **GCC**Clause 34.

#### 14. Conflict of Interest

4.1. All Bidders found to have conflicting interests shall be disqualified to participate in the procurement at hand, without prejudice to the imposition of appropriate administrative,

civil, and criminal sanctions. A Bidder may be considered to have conflicting interests with another Bidder in any of the events described in paragraphs (a) through (c) and a general conflict of interest in any of the circumstances set out in paragraphs (d) through (g) below:

- (a) A Bidder has controlling shareholders in common with another Bidder;
- (b) A Bidder receives or has received any direct or indirect subsidy from any other Bidder;
- (c) A Bidder has the same legal representative as that of another Bidder for purposes of this Bid;
- (d) A Bidder has a relationship, directly or through third parties, that puts them in a position to have access to information about or influence on the bid of another Bidder or influence the decisions of the Procuring Entity regarding this bidding process;
- (e) A Bidder submits more than one bid in this bidding process. However, this does not limit the participation of subcontractors in more than one bid;
- (f) A Bidder who participated as a consultant in the preparation of the design or technical specifications of the goods and related services that are the subject of the bid; or
- (g) A Bidder who lends, or temporarily seconds, its personnel to firms or organizations which are engaged in consulting services for the preparation related to procurement for or implementation of the project, if the personnel would be involved in any capacity on the same project.
- 4.2. In accordance with Section 47 of the IRR of RA 9184, all Bidding Documents shall be accompanied by a sworn affidavit of the Bidder that it is not related to the Head of the Procuring Entity (HoPE), members of the Bids and Awards Committee (BAC), members of the Technical Working Group (TWG), members of the BAC Secretariat, the head of the Project Management Office (PMO) or the end-user unit, and the project consultants, by consanguinity or affinity up to the third civil degree. On the part of the Bidder, this Clause shall apply to the following persons:
  - (a) If the Bidder is an individual or a sole proprietorship, to the Bidder himself;
  - (b) If the Bidder is a partnership, to all its officers and members;
  - (c) If the Bidder is a corporation, to all its officers, directors, and controlling stockholders;
  - (d) If the Bidder is a cooperative, to all its officers, directors, and controlling shareholders or members; and

(e) If the Bidder is a joint venture (JV), the provisions of items (a), (b), (c) or (d) of this Clause shall correspondingly apply to each of the members of the said JV, as may be appropriate.

Relationship of the nature described above or failure to comply with this Clause will result in the automatic disqualification of a Bidder.

#### 15. Eligible Bidders

- 5.1. Unless otherwise indicated in the <u>BDS</u>, the following persons shall be eligible to participate in this Bidding:
  - (a) Duly licensed Filipino citizens/sole proprietorships;
  - (b) Partnerships duly organized under the laws of the Philippines and of which at least sixty percent (60%) of the interest belongs to citizens of the Philippines;
  - (c) Corporations duly organized under the laws of the Philippines, and of which at least sixty percent (60%) of the outstanding capital stock belongs to citizens of the Philippines;
  - (d) Cooperatives duly organized under the laws of the Philippines;
  - (e) Persons/entities forming themselves into a JV, i.e., a group of two (2) or more persons/entities that intend to be jointly and severally responsible or liable for a particular contract: Provided, however, that, in accordance with Executive Order No. 65 (EO 65), s. 2018<sup>1</sup>, Filipino ownership or interest of the joint venture concerned shall be at least sixty percent (60%): Provided, further, that joint ventures in which Filipino ownership or interest is less than sixty percent (60%) may be eligible where the structures to be built require the application of techniques and/or technologies which are not adequately possessed by a person/entity meeting the sixty percent (60%) Filipino ownership or interest shall not be less than twenty five percent (25%). For this purpose, Filipino ownership or interest shall be based on the contributions of each of the members of the joint venture as specified in their JVA.
- 5.2. The Procuring Entity may also invite foreign bidders when provided for under any Treaty or International or Executive Agreement as specified in the **BDS**.
- 5.3. Government owned or controlled corporations (GOCCs) may be eligible to participate only if they can establish that they (a) are legally and financially autonomous, (b) operate under commercial law, and (c) are not attached agencies of the Procuring Entity.

<sup>&</sup>lt;sup>1</sup> Promulgating the Eleventh Foreign Investment Negative List issued on 29 October 2018

5.4. (a) The Bidder must have an experience of having completed a Single Largest Completed Contract (SLCC) that is similar to this Project, equivalent to at least fifty percent (50%) of the ABC adjusted, if necessary,by the Bidder to current prices using the Philippine Statistics Authority(PSA) consumer price index. However, contractors under Small A and Small B categories without similar experience on the contract to be bid may be allowed to bid if the cost of such contract is not more thanthe Allowable Range of Contract Cost (ARCC) of their registration based on the guidelines as prescribed by the PCAB

(b) For Foreign-funded Procurement, the Procuring Entity and the foreign government/foreign or international financing institution may agree on another track record requirement, as specified in the **BDS**.

For this purpose, contracts similar to the Project shall be those described in the **BDS**.

5.5. The Bidder must submit a computation of its Net Financial Contracting Capacity (NFCC), which must be at least equal to the ABC to be bid, calculated as follows:

NFCC = [(Current assets minus current liabilities) (15)] minus the value of all outstanding or uncompleted portions of the projects under ongoing contracts, including awarded contracts yet to be started coinciding with the contract for this Project.

The values of the domestic bidder's current assets and current liabilities shall be based on the latest Audited Financial Statements (AFS) submitted to the BIR.

For purposes of computing the foreign bidders' NFCC, the value of the current assets and current liabilities shall be based on their audited financial statements prepared in accordance with international financial reporting standards.

#### 16. Bidder's Responsibilities

- 6.1. The Bidder or its duly authorized representative shall submit a sworn statement in the form prescribed in Section IX as required in **ITB** Clause 12.1(b)(iii).
- 6.2. The Bidder is responsible for the following:
  - (a) Having taken steps to carefully examine all of the Bidding Documents;
  - (b) Having acknowledged all conditions, local or otherwise, affecting the implementation of the contract;
  - (c) Having made an estimate of the facilities available and needed for the contract to be bid, if any;
  - (d) Having complied with its responsibility to inquire or secure Supplemental/Bid Bulletin/s as provided under **ITB** Clause10.4;

- (e) Ensuring that it is not "blacklisted" or barred from bidding by the GoP or any of its agencies, offices, corporations, or LGUs, including foreign government/foreign or international financing institution whose blacklisting rules have been recognized by the GPPB;
- (f) Ensuring that each of the documents submitted in satisfaction of the bidding requirements is an authentic copy of the original, complete, and all statements and information provided therein are true and correct;
- (g) Authorizing the HoPE or its duly authorized representative/s to verify all the documents submitted;
- (h) Ensuring that the signatory is the duly authorized representative of the Bidder, and granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract, accompanied by the duly notarized Special Power of Attorney, Board/Partnership Resolution, or Secretary's Certificate, whichever is applicable;
- (i) Complying with the disclosure provision under Section 47 of RA 9184and its IRR in relation to other provisions of RA 3019;
- (j) Complying with existing labor laws and standards, in the case of procurement of services. Moreover, bidder undertakes to;
  - (i) Ensure the entitlement of workers to wages, hours of work, safety and health and other prevailing conditions of work as established by national laws, rules and regulations; or collective bargaining agreement; or arbitration award, if and when applicable.

In case there is a finding by the Procuring Entity or the DOLE of underpayment or non-payment of workers' wage and wage-related benefits, bidder agrees that the performance security or portion of the contract amount shall be withheld in favor of the complaining workers pursuant to appropriate provisions of Republic Act No. 9184 without prejudice to the institution of appropriate actions under the Labor Code, as amended, and other social legislations.

(ii) Comply with occupational safety and health standards and to correct deficiencies, if any.

In case of imminent danger, injury or death of the worker, bidder undertakes to suspend contract implementation pending clearance to proceed from the DOLE Regional Office and to comply with Work Stoppage Order; and

(iii) Inform the workers of their conditions of work, labor clauses under the contract specifying wages, hours of work and other benefits under prevailing national laws, rules and regulations; or collective bargaining agreement; or arbitration award, if and when applicable, through posting in two (2) conspicuous places in the establishment's premises; and

(k) Ensuring that it did not give or pay, directly or indirectly, any commission, amount, fee, or any form of consideration, pecuniary or otherwise, to any person or official, personnel or representative of the;

Failure to observe any of the above responsibilities shall be at the risk of the Bidder concerned.

- 6.3. The Bidder, by the act of submitting its bid, shall be deemed to have inspected the site, determined the general characteristics of the contract works and the conditions for this Project and examine all instructions, forms, terms, and project requirements in the Bidding Documents.
- 6.4. It shall be the sole responsibility of the prospective bidder to determine and to satisfy itself by such means as it considers necessary or desirable as to all matters pertaining to this Project, including: (a) the location and the nature of the contract, project, or work; (b) climatic conditions; (c) transportation facilities; (c) nature and condition of the terrain, geological conditions at the site communication facilities, requirements, location and availability of construction aggregates and other materials, labor, water, electric power and access roads; and (d) other factors that may affect the cost, duration and execution or implementation of the contract, project, or work.
- 6.5. The Procuring Entity shall not assume any responsibility regarding erroneous interpretations or conclusions by the prospective or eligible bidder out of the data furnished by the procuring entity. However, the Procuring Entity shall ensure that all information in the Bidding Documents, including supplemental/bid bulletins issued are correct and consistent.
- 6.6. Before submitting their bids, the Bidders are deemed to have become familiar with all existing laws, decrees, ordinances, acts, rules and regulations of the Philippines which may affect the contract in any way.
- 6.7. The Bidder shall bear all costs associated with the preparation and submission of his bid, and the Procuring Entity will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.
- 6.8. The Bidder should note that the Procuring Entity will accept bids only from those that have paid the applicable fee for the Bidding Documents at the office indicated in the Invitation to Bid.

#### 17. Origin of Goods and Services

There is no restriction on the origin of Goods, or Contracting of Works or Services other than those prohibited by a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations

#### 18. Subcontracts

- 8.1. Unless otherwise specified in the <u>BDS</u>, the Bidder may subcontract portions of the Works to an extent as may be approved by the Procuring Entity and stated in the <u>BDS</u>. However, subcontracting of any portion shall not relieve the Bidder from any liability or obligation that may arise from the contract for this Project.
- 8.2. Subcontractors must submit the documentary requirements under **ITB** Clause 12 and comply with the eligibility criteria specified in the <u>BDS</u>. In the event that any subcontractor is found by the Procuring Entity to be ineligible, the subcontracting of such portion of the Works shall be disallowed.
- 8.3. The Bidder may identify the subcontractor to whom a portion of the Works will be subcontracted at any stage of the bidding process or during contract implementation. If the Bidder opts to disclose the name of the subcontractor during bid submission, the Bidder shall include the required documents as part of the technical component of its bid.

#### A. Contents of Bidding Documents

#### 19. Pre-Bid Conference

9.1. (a) If so specified in the **BDS**, a pre-bid conference shall be held at the venue and on the date indicated therein, to clarify and address the Bidders' questions on the technical and financial components of this Project.

(b) The pre-bid conference shall be held at least twelve (12) calendar days before the deadline for the submission of and receipt of bids, but not earlier than seven (7) calendar days from the posting of the Invitation to Bid/Bidding Documents in the PhilGEPS website. If the Procuring Entity determines that, by reason of the method, nature, or complexity of the contract to be bid, or when international participation will be more advantageous to the GoP, a longer period for the preparation of bids is necessary, the pre-bid conference shall be held at least thirty (30) calendar days before the deadline for the submission and receipt of bids, as specified in the <u>BDS</u>

- 9.2. Bidders are encouraged to attend the pre-bid conference to ensure that they fully understand the Procuring Entity's requirements. Non-attendance of the Bidder will in no way prejudice its bid; however, the Bidder is expected to know the changes and/or amendments to the Bidding Documents as recorded in the minutes of the pre-bid conference and the Supplemental/Bid Bulletin. The minutes of the pre-bid conference shall be recorded and prepared not later than five (5) calendar days after the pre-bid conference. The minutes shall be made available to prospective bidders not later than five (5) days upon written request.
- 9.3. Decisions of the BAC amending any provision of the bidding documents shall be issued in writing through a Supplemental/Bid Bulletin at least seven (7) calendar days before the deadline for the submission and receipt of bids.

#### 110. Clarification and Amendment of Bidding Documents

- 10.1. Prospective bidders may request for clarification(s) on and/or interpretation of any part of the Bidding Documents. Such a request must be in writing and submitted to the Procuring Entity at the address indicated in the <u>BDS</u> at least ten (10) calendar days before the deadline set for the submission and receipt of Bids.
- 10.2. The BAC shall respond to the said request by issuing a Supplemental/Bid Bulletin, to be made available to all those who have properly secured the Bidding Documents, at least seven (7) calendar days before the deadline for the submission and receipt of Bids
- 10.3. Supplemental/Bid Bulletins may also be issued upon the Procuring Entity's initiative for purposes of clarifying or modifying any provision of the Bidding Documents not later than seven (7) calendar days before the deadline for the submission and receipt of Bids. Any modification to the Bidding Documents shall be identified as an amendment.
- 10.4. Any Supplemental/Bid Bulletin issued by the BAC shall also be posted in the PhilGEPS and the website of the Procuring Entity concerned, if available, and at any conspicuous place in the premises of the Procuring Entity concerned. It shall be the responsibility of all Bidders who have properly secured the Bidding Documents to inquire and secure Supplemental/Bid Bulletins that may be issued by the BAC. However, Bidders who have submitted bids before the issuance of the Supplemental/Bid Bulletin must be informed and allowed to modify or withdraw their bids in accordance with **ITB** Clause 23.

### B. Preparation of Bids

#### 111. Language of Bids

The eligibility requirements or statements, the bids, and all other documents to be submitted to the BAC must be in English. If the eligibility requirements or statements, the bids, and all other documents submitted to the BAC are in foreign language other than English, it must be accompanied by a translation of the documents in English. The documents shall be translated by the relevant foreign government agency, the foreign government agency authorized to translate documents, or a registered translator in the foreign bidder's country; and shall be authenticated by the appropriate Philippine foreign service establishment/post or the equivalent office having jurisdiction over the foreign bidder's affairs in the Philippines. However, for Contracting Parties to the Apostille Convention, the documents shall be authenticated through an apostille by the Competent Authority, except for countries<sup>2</sup> identified by the Department of Foreign Affairs (DFA) that will still require legalization (red ribbon) by the relevant Embassy or Consulate. A Contracting Party refers to a State that has joined the Apostille Convention, GPPB Resolution No. 13-2019, dated 23 May 2019 page 9 of 19 whether or not the Convention has entered into force for that State<sup>3</sup>.

<sup>&</sup>lt;sup>2</sup>As of May 14, 2019: Austria, Finland, Germany and Greece.

<sup>&</sup>lt;sup>3</sup> Apostille Handbook, A Handbook on the Practical Operation of the Apostille Convention, p. xviii. Netherland: The Hague Conference on Private International Permanent Bureau.

A Competent Authority refers to the authority designated by a Contracting Party that is competent to issue an apostille. A Contracting Party may designate one or more Competent Authorities and may designate Competent Authorities that are competent to issue an apostille for certain categories of public documents. Information about designated Competent Authorities may be found on the Apostille Section of the Hague Conference website under "Competent Authorities".<sup>4</sup>

The English translation shall govern, for purposes of interpretation of the bid.

#### 112. Documents Comprising the Bid: Eligibility and Technical Components

- 12.1. Unless otherwise indicated in the **<u>BDS</u>**, the first envelope shall contain the following eligibility and technical documents:
  - (a) Eligibility Documents –

Class "A" Documents

- (i) PhilGEPS Certificate of Registration and Membership in accordance with Section 8.5.2 of the IRR, for procurement to be performed overseas, it shall be subject to the Guidelines to be issued by the GPPB.
- (ii) Statement of all its ongoing government and private contracts, including contracts awarded but not yet started, if any, whether similar or not similar in nature and complexity to the contract to be bid; and

Statement of the Bidder's SLCC similar to the contract to be bid, in accordance with ITB Clause 5.4.

The two statements required shall indicate for each contract the following:

- (i.1) name of the contract;
- (ii.1) date of the contract;
- (ii.2) contract duration;
- (ii.3) owner's name and address;
- (ii.4) nature of work;
- (ii.5) contractor's role (whether sole contractor, subcontractor, or partner in a JV) and percentage of participation;
- (ii.6) total contract value at award;

<sup>&</sup>lt;sup>4</sup> Ibid.

- (ii.7) date of completion or estimated completion time;
- (ii.8) total contract value at completion, if applicable;
- (ii.9) percentages of planned and actual accomplishments, if applicable;
- (ii.10) value of outstanding works, if applicable;

The statement of the Bidder's SLCC shall be supported by the Notice of Award and/or Notice to Proceed, Project Owner's Certificate of Final Acceptance issued by the Ownerother than the Contractor or the Constructors Performance Evaluation System (CPES) Final Rating, which must be at least satisfactory. In case of contracts with the private sector, an equivalent document shall be submitted;

- Unless otherwise provided in the <u>BDS</u>, a valid special PCAB License in case of joint venture, and registration for the type and cost of the contract for this Project; and
- (iv) NFCC computation in accordance with ITB Clause 5.5.

Class "B" Document

- (v) If applicable, Joint Venture Agreement (JVA) in accordance with RA 4566.
- (b) Technical Documents
  - (i) Bid security in accordance with**ITB** Clause 18. If the Bidder opts to submit the bid security in the form of:
    - (i.1) a bank draft/guarantee or an irrevocable letter of credit issued by a foreign bank, it shall be accompanied by a confirmation from a Universal or Commercial Bank; or
    - (i.2) a surety bond accompanied by a certification coming from the Insurance Commission that the surety or insurance company is authorized to issue such instruments.
  - (ii) Project Requirements, which shall include the following:
    - (ii.1) Organizational chart for the contract to be bid;
    - (ii.2) List of contractor's personnel (*e.g.*,Project Manager, Project Engineers, Materials Engineers, and Foremen), to be assigned to the contract to be bid, with their complete qualification and experience data. These personnel must

meet the required minimum years of experience set in the **BDS**; and

- (ii.3) List of contractor's major equipment units, which are owned, leased, and/or under purchase agreements, supported by proof of ownership, certification of availability of equipment from the equipment lessor/vendor for the duration of the project, as the case may be, which must meet the minimum requirements for the contract set in the <u>BDS</u>; and
- (iii) Sworn statement in accordance with Section 25.3 of the IRR of RA 9184 and using the form prescribed in Section IX. Bidding Forms.

#### 113. Documents Comprising the Bid: Financial Component

- 13.1. the financial component of the bid shall contain the following:
  - (a) Financial Bid Form, which includes bid prices and the bill of quantities, in accordance with **ITB** Clauses 15.1 and 15.3; and
  - (b) Any other document related to the financial component of the bid as stated in the **BDS**.
- 13.2 (a) Unless otherwise stated in the <u>BDS</u>, all Bids that exceed the ABC shall not be accepted.
  - (b) Unless otherwise indicated in the <u>BDS</u>, for foreign-funded procurement, a ceiling may be applied to bid prices provided the following conditions are met:
    - (i) Bidding Documents are obtainable free of charge on a freely accessible website. If payment of Bidding Documents is required by the procuring entity, payment could be made upon the submission of bids.
    - (ii) The procuring entity has procedures in place to ensure that the ABC is based on recent estimates made by the engineer or the responsible unit of the procuring entity and that the estimates are based on adequate detailed engineering (in the case of infrastructure projects) and reflect the quality, supervision and risk and inflationary factors, as well as prevailing market prices, associated with the types of works or goods to be procured.
    - (iii) The procuring entity has trained cost estimators on estimating prices and analyzing bid variances. In the case of infrastructure projects, the procuring entity must also have trained quantity surveyors.
    - (iv) The procuring entity has established a system to monitor and report bid prices relative to ABC and engineer's/procuring entity's estimate.

(v) The procuring entity has established a monitoring and evaluation system for contract implementation to provide a feedback on actual total costs of goods and works.

#### 114. Alternative Bids

- 14.1. Alternative Bids shall be rejected. For this purpose, alternative bid is an offer made by a Bidder in addition or as a substitute to its original bid which may be included as part of its original bid or submitted separately therewith for purposes of bidding. A bid with options is considered an alternative bid regardless of whether said bid proposal is contained in a single envelope or submitted in two (2) or more separate bid envelopes.
- 14.2. Bidders shall submit offers that comply with the requirements of the Bidding Documents, including the basic technical design as indicated in the drawings and specifications. Unless there is a value engineering clause in the <u>BDS</u>, alternative bids shall not be accepted.
- 14.3. Each Bidder shall submit only one Bid, either individually or as a partner in a JV. A Bidder who submits or participates in more than one bid (other than as a subcontractor if a subcontractor is permitted to participate in more than one bid) will cause all the proposals with the Bidder's participation to be disqualified. This shall be without prejudice to any applicable criminal, civil and administrative penalties that may be imposed upon the persons and entities concerned.

#### 115. Bid Prices

- 15.1. The contract shall be for the whole Works, as described in **ITB** Clause 1.1, based on the priced Bill of Quantities submitted by the Bidder.
- 15.2. The Bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Bids not addressing or providing all of the required items in the Bidding Documents including, where applicable, Bill of Quantities, shall be considered non-responsive and, thus, automatically disqualified. In this regard, where a required item is provided, but no price is indicated, the same shall be considered as non-responsive, but specifying a zero (0)or a dash (-) for the said item would mean that it is being offered for free to the Government, except those required by law or regulations to be provided for.
- 15.3. All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, prior to the deadline for submission of bids, shall be included in the rates, prices, and total bid price submitted by the Bidder.
- 15.4. All bid prices for the given scope of work in the contract as awarded shall be considered as fixed prices, and therefore not subject to price escalation during contract implementation, except under extraordinary circumstances as specified in GCC Clause 48. Upon the recommendation of the Procuring Entity, price escalation may be allowed in extraordinary circumstances as may be determined by the National Economic and Development Authority in accordance with the Civil Code of the Philippines, and upon

approval by the GPPB. Furthermore, in cases where the cost of the awarded contract is affected by any applicable new laws, ordinances, regulations, or other acts of the GoP, promulgated after the date of bid opening, a contract price adjustment shall be made or appropriate relief shall be applied on a no loss-no gain basis.

#### 116. Bid Currencies

- 16.1. All bid prices shall be quoted in Philippine Pesos unless otherwise provided in the **<u>BDS</u>**. However, for purposes of bid evaluation, bids denominated in foreign currencies shall be converted to Philippine currency based on the exchange rate prevailing on the day of the Bid opening.
- 16.2. If so allowed in accordance with **ITB** Clause 16.1, the Procuring Entity for purposes of bid evaluation and comparing the bid prices will convert the amounts in various currencies in which the bid price is expressed to Philippine Pesos at the exchange rate as published in the *BangkoSentraIngPilipinas*(BSP) reference rate bulletin on the day of the bid opening.
- 16.3. Unless otherwise specified in the <u>BDS</u>, payment of the contract price shall be made in Philippine Pesos.

#### 117. Bid Validity

- 17.1. Bids shall remain valid for the period specified in the **<u>BDS</u>** which shall not exceed one hundred twenty (120) calendar days from the date of the opening of bids.
- 17.2. In exceptional circumstances, prior to the expiration of the bid validity period, the Procuring Entity may request Bidders to extend the period of validity of their bids. The request and the responses shall be made in writing. The bid security described in **ITB** Clause 18 should also be extended corresponding to the extension of the bid validity period at the least. A Bidder may refuse the request without forfeiting its bid security, but his bid shall no longer be considered for further evaluation and award. A Bidder granting the request shall not be required or permitted to modify its bid.

#### 118. Bid Security

18.1. The Bidder shall submit a Bid Securing Declaration or any form of Bid Security in an amount stated in the **BDS**, which shall be not less than the percentage of the ABC in accordance with the following schedule:

	Form of Bid Security	Amount of Bid Security (Not less than the Percentage of the ABC)
(a)	Cash or cashier's/manager's check issued by a Universal or Commercial Bank.	
	For biddings conducted by LGUs,	

the cashier's/manager's check may be issued by other banks certified by the BSP as authorized to issue such financial instrument.	Two percent (2%)
(b) Bank draft/guarantee or irrevocable letter of credit issued by a Universal or Commercial Bank: Provided, however, that it shall be confirmed or authenticated by a Universal or Commercial Bank, if issued by a foreign bank.	
the Bank Draft/Guarantee, or irrevocable letter of credit may be issued by other banks certified by the BSP as authorized to issue such financial instrument.	
<ul> <li>(c) Surety bond callable upon demand issued by a surety or insurance company duly certified by the Insurance Commission as authorized to issue such security;</li> </ul>	Five percent (5%)

The Bid Securing Declaration mentioned above is an undertaking which states, among others, that the Bidder shall enter into contract with the procuring entity and furnish the performance security required under ITB Clause 32.2, within ten (10) calendar days from receipt of the Notice of Award, and commits to pay the corresponding amount as fine, and be suspended for a period of time from being qualified to participate in any government procurement activity in the event it violates any of the conditions stated therein as provided in the guidelines issued by the GPPB

- 18.2. The bid security should be valid for the period specified in the **BDS**. Any bid not accompanied by an acceptable bid security shall be rejected by the Procuring Entity as non-responsive.
- 18.3. No bid securities shall be returned to Bidders after the opening of bids and before contract signing, except to those that failed or declared as post-disqualified, upon submission of a written waiver of their right to file a request for reconsideration and/or protest, or lapse of the reglementaryperiod without having filed a request for reconsideration or protest. Without prejudice on its forfeiture, Bid Securities shall be returned only after the Bidder with the Lowest Calculated Responsive Bid (LCRB) has signed the contract and furnished the Performance Security, but in no case later than the expiration of the Bid Security validity period indicated in <u>ITB Clause</u>18.2.
- 18.4. Upon signing and execution of the contract, pursuant to ITB Clause 31, and the posting of the performance security, pursuant to ITB Clause 32, the successful

Bidder's Bid Security will be discharged, but in no case later than the Bid Security validity period as indicated in **ITB** Clause 18.2.

- 18.5. The bid security may be forfeited:
  - (a) if a Bidder:
    - (i) withdraws its bid during the period of bid validity specified in **ITB** Clause 17;
    - (ii) does not accept the correction of errors pursuant to **ITB** Clause 27.3(b);
    - (iii) has a finding against the veracity of the required documents submitted in accordance with ITB Clause 28.2;
    - (iv) submission of eligibility requirements containing false information or falsified documents;
    - submission of bids that contain false information or falsified documents, or the concealment of such information in the bids in order to influence the outcome of eligibility screening or any other stage of the public bidding;
    - (vi) allowing the use of one's name, or using the name of another for purposes of public bidding;
    - (vii) withdrawal of a bid, or refusal to accept an award, or enter into contract with the Government without justifiable cause, after the Bidder had been adjudged as having submitted the LCRB;
    - (viii) refusal or failure to post the required performance security within the prescribed time;
    - (ix) refusal to clarify or validate in writing its bid during post-qualification within a period of seven (7) calendar days from receipt of the request for clarification;
    - (x) any documented attempt by a Bidder to unduly influence the outcome of the bidding in his favor;
    - (xi) failure of the potential joint venture partners to enter into the joint venture after the bid is declared successful; or
    - (xii) all other acts that tend to defeat the purpose of the competitive bidding, such as habitually withdrawing from bidding, submitting late Bids or patently insufficient bid, for at least three (3) times within a year, except for valid reasons.

- (b) if the successful Bidder:
  - (i) fails to sign the contract in accordance with **ITB** Clause 31;
  - (ii) failsto furnish performance security in accordance with **ITB** Clause 32.

#### **119.** Format and Signing of Bids

- 19.1. Bidders shall submit their bids through their duly authorized representative using the appropriate forms provided in Section IX on or before the deadline specified in the ITB Clause 21 in two (2) separate sealed bid envelopes, and which shall be submitted simultaneously. The first shall contain the technical component of the bid, including the eligibility requirements under ITB Clause 12.1, and the second shall contain the financial component of the bid. This shall also be observed for each lot in the case of lot procurement.
- 19.2. Forms as mentioned in **ITB** Clause 19.1 must be completed without any alterations to their format, and no substitute form shall be accepted. All blank spaces shall be filled in with the information requested.
- 19.3. The Bidder shall prepare and submit an original of the first and second envelopes as described in **ITB** Clauses 12 and 13. In addition, the Bidder shall submit copies of the first and second envelopes. In the event of any discrepancy between the original and the copies, the original shall prevail.
- 19.4. Each and every page of the Bid Form, including the Bill of Quantities, under Section IX hereof, shall be signedby the duly authorized representative/s of the Bidder. Failure to do so shall be a ground for the rejection of the bid.
- 19.5. Any interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the duly authorized representative/s of the Bidder.

#### 120. Sealing and Marking of Bids

- 20.1. Bidders shall enclose their original eligibility and technical documents described in ITB Clause 12, in one sealed envelope marked "ORIGINAL TECHNICAL COMPONENT," and the original of their financial component in another sealed envelope marked "ORIGINAL FINANCIAL COMPONENT," sealing them all in an outer envelope marked "ORIGINAL BID."
- 20.2. Each copy of the first and second envelopes shall be similarly sealed duly marking the inner envelopes as "COPY NO. \_\_\_\_\_ TECHNICAL COMPONENT" and "COPY NO. \_\_\_\_\_ FINANCIAL COMPONENT" and the outer envelope as "COPY NO. \_\_\_\_\_", respectively. These envelopes containing the original and the copies shall then be enclosed in one single envelope.
- 20.3. The original and the number of copies of the bid as indicated in the **BDS** shall be typed or written in ink and shall be signed by the Bidder or its duly authorized representative/s.

#### 20.4. All envelopes shall:

- (a) contain the name of the contract to be bid in capital letters;
- (b) bear the name and address of the Bidder in capital letters;
- (c) be addressed to the Procuring Entity's BAC in accordance with **ITB**Clause 21;
- (d) bear the specific identification of this bidding process indicated in the **ITB** Clause 1.2; and
- (e) bear a warning "DO NOT OPEN BEFORE..." the date and time for the opening of bids, in accordance with **ITB** Clause 21.
- 20.5. Bid envelopes that are not properly sealed and marked, as required in the bidding documents, shall not be rejected, but the Bidder or its duly authorized representative shall acknowledge such condition of the bid as submitted. The BAC or the Procuring Entity shall assume no responsibility for the misplacement of the contents of the improperly sealed or marked bid, or for its premature opening.

#### C. Submission and Opening of Bids

#### 121. Deadline for Submission of Bids

Bids must be received by the Procuring Entity's BAC at the address and on or before the date and time indicated in the <u>BDS</u>. In case the deadline for submission of bids fall on a non-working day duly declared by the president, governor or mayor or other government official authorized to make such declaration, the deadline shall be the next working day.

#### 122. Late Bids

Any bid submitted after the deadline for submission and receipt of bids prescribed by the Procuring Entity, pursuant to **ITB** Clause 21, shall be declared "Late" and shall not be accepted by the Procuring Entity. The BAC shall record in the minutes of Bid Submission and Opening, the Bidder's name, its representative and the time the late bid was submitted.

#### 123. Modification and Withdrawal of Bids

23.1. The Bidder may modify its bid after it has been submitted; provided that the modification is received by the Procuring Entity prior to the deadline prescribed for submission and receipt of bids. The Bidder shall not be allowed to retrieve its original bid, but shall be allowed to submit another bid equally sealed and properly identified in accordance with Clause 20, linked to its original bid marked as "TECHNICAL MODIFICATION" or "FINANCIAL MODIFICATION" and stamped "received" by the BAC. Bid modifications received after the applicable deadline shall not be considered and shall be returned to the Bidder unopened.

- 23.2. A Bidder may, through a Letter of Withdrawal, withdraw its bid after it has been submitted, for valid and justifiable reason; provided that the Letter of Withdrawal is received by the Procuring Entity prior to the deadline prescribed for submission and receipt of bids. The Letter of Withdrawal must be executed by the authorized representative of the Bidder identified in the Omnibus Sworn Statement, a copy of which should be attached to the letter.
- 23.3. Bids requested to be withdrawn in accordance with ITB Clause 23.1 shall be returned unopened to the Bidders. A Bidder, who has acquired the bidding documents may also express its intention not to participate in the bidding through a letter which should reach and be stamped by the BAC before the deadline for submission and receipt of bids. A Bidder that withdraws its bid shall not be permitted to submit another bid, directly or indirectly, for the same contract.
- 23.4. No bid may be modified after the deadline for submission of bids. No bid may be withdrawn in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the Financial Bid Form. Withdrawal of a bid during this interval shall result in the forfeiture of the Bidder's bid security, pursuant to ITB Clause 18.5, and the imposition of administrative, civil, and criminal sanctions as prescribed by RA 9184 and its IRR.

#### 124. Opening and Preliminary Examination of Bids

- 24.1. The BAC shall open the Bids in public, immediately after the deadline for the submission and receipt of bids in public, as specified in the <u>BDS</u>. In case the Bids cannot be opened as scheduled due to justifiable reasons, the BAC shall take custody of the Bids submitted and reschedule the opening of Bids on the next working day or at the soonest possible time through the issuance of a Notice of Postponement to be posted in the PhilGEPS website and the website of the Procuring Entity concerned.
- 24.2. Unless otherwise specified in the **BDS**, the BAC shall open the first bid envelopes and determine each Bidder's compliance with the documents prescribed in ITB Clause 12, using a non-discretionary "pass/fail" criterion. If a Bidder submits the required document, it shall be rated "passed" for that particular requirement. In this regard, bids that fail to include any requirement or are incomplete or patently insufficient shall be considered as "failed". Otherwise, the BAC shall rate the said first bid envelope as "passed".
- 24.3. Unless otherwise specified in the <u>BDS</u>, immediately after determining compliance with the requirements in the first envelope, the BAC shall forthwith open the second bid envelope of each remaining eligible Bidder whose first bid envelope was rated "passed." The second envelope of each complying Bidder shall be opened within the same day. In case one or more of the requirements in the second envelope of a particular bid is missing, incomplete or patently insufficient, and/or if the submitted total bid price exceeds the ABC unless otherwise provided in <u>ITB</u> Clause 13.2, the BAC shall rate the bid concerned as "failed." Only bids that are determined to contain all the

bid requirements for both components shall be rated "passed" and shall immediately be considered for evaluation and comparison.

- 24.4. Letters of Withdrawal shall be read out and recorded during bid opening, and the envelope containing the corresponding withdrawn bid shall be returned to the Bidder unopened.
- 24.5. All members of the BACwho are present during bid opening shall initial every page of the original copies of all bids received and opened.
- 24.6. In the case of an eligible foreign bidder as described in **ITB** Clause 5, the following Class "A" Documents may be substituted with the appropriate equivalent documents, if any, issued by the country of the foreign bidder concerned, which shall likewise be uploaded and maintained in the PhilGEPS in accordance with Section 8.5.2 of the IRR.:
  - Registration certificate from the Securities and Exchange Commission (SEC), Department of Trade and Industry (DTI) for sole proprietorship, or CDA for cooperatives;
  - b) Mayor's/Business permit issued by the local governmentwhere the principal place of business of the Bidder is located; and
  - c) Audited Financial Statements showing, among others, the prospective Bidder's total and current assets and liabilities stamped "received" by the Bureau of Internal Revenue or its duly accredited and authorized institutions, for the preceding calendar year which should not be earlier than two years from the date of bid submission.
- 24.7. Each partner of a joint venture agreement shall likewise submit the document required in ITB Clause 12.1(a)(i). Submission of documents required under ITB Clauses 12.1 (a)(ii) to 12.1(a)(iv) by any of the joint venture partners constitutes compliance.
- 24.8. The Procuring Entity shall prepare the minutes of the proceedings of the bid opening that shall include, as a minimum: (a) names of Bidders, their bid price (per lot, if applicable, and/or including discount, if any), bid security, findings of preliminary examination, and whether there is a withdrawal or modification; and (b) attendance sheet. The BAC members shall sign the abstract of bids as read.
- 24.9. The Bidders or their duly authorized representatives may attend the opening of bids. The BAC shall ensure the integrity, security, and confidentiality of all submitted bids. The Abstract of Bids as read and the minutes of the Bid Opening shall be made available to the public upon written request and payment of a specified fee to recover cost of materials.
- 24.10. To ensure transparency and accurate representation of the bid submission, the BAC Secretariat shall notify in writing all Bidders whose bids it has received through its

PhilGEPS-registered physical address or official e-mail address. The notice shall be issued within seven (7) calendar days from the date of the bid opening.

#### D. Evaluation and Comparison of Bids

#### 125. Process to be Confidential

- 25.1. Members of the BAC, including its staff and personnel, as well as its Secretariat and TWG, are prohibited from making or accepting any kind of communication with any Bidder regarding the evaluation of their bids until the issuance of the Notice of Award, unless otherwise allowed in the case of **ITB** Clause 26.
- 25.2. Any effort by a Bidder to influence the Procuring Entity in the Procuring Entity's decision in respect of bid evaluation, bid comparison or contract award will result in the rejection of the Bidder's bid.

#### 126. Clarification of Bids

To assist in the evaluation, comparison and post-qualification of the bids, the Procuring Entity may ask in writing any Bidder for a clarification of its bid. All responses to requests for clarification shall be in writing. Any clarification submitted by a Bidder in respect to its bid and that is not in response to a request by the Procuring Entity shall not be considered.

#### 127. Detailed Evaluation and Comparison of Bids

- 27.1. The Procuring Entity will undertake the detailed evaluation and comparison of Bids which have passed the opening and preliminary examination of Bids, pursuant to **ITB** Clause 24, in order to determine the Lowest Calculated Bid.
- 27.2. The Lowest Calculated Bid shall be determined in two steps:
  - (a) The detailed evaluation of the financial component of the bids, to establish the correct calculated prices of the bids; and
  - (b) The ranking of the total bid prices as so calculated from the lowest to highest. The bid with the lowest price shall be identified as the Lowest Calculated Bid.
- 27.3. The Procuring Entity's BAC shall immediately conduct a detailed evaluation of all bids rated "passed," using non-discretionary "pass/fail" criterion. The BAC shall consider the following in the evaluation of bids:
  - (a) <u>Completeness of the bid</u>. Unless the <u>BDS</u> allows partial bids, bids not addressing or providing all of the required items in the Schedule of Requirements including, where applicable, bill of quantities, shall be considered non-responsive and, thus, automatically disqualified. In this regard, where a required item is provided, but no price is indicated, the same shall be considered as non-responsive, but specifying a zero (0)or a dash (-) for the

said item would mean that it is being offered for free to the Procuring Entity, except those required by law or regulations to be provided for; and

- (b) <u>Arithmetical corrections</u>. Consider computational errors and omissions to enable proper comparison of all eligible bids. It may also consider bid modifications. Any adjustment shall be calculated in monetary terms to determine the calculated prices.
- 27.4. Based on the detailed evaluation of bids, those that comply with the above-mentioned requirements shall be ranked in the ascending order of their total calculated bid prices, as evaluated and corrected for computational errors, discounts and other modifications, to identify the Lowest Calculated Bid. Total calculated bid prices, as evaluated and corrected for computational errors, discounts and other modifications, which exceed the ABC shall not be considered, unless otherwise indicated in the <u>BDS</u>.
- 27.5. The Procuring Entity's evaluation of bids shall be based on the bid price quoted in the Bid Form, which includes the Bill of Quantities
- 27.6. Bids shall be evaluated on an equal footing to ensure fair competition. For this purpose, all Bidders shall be required to include in their bids the cost of all taxes, such as, but not limited to, value added tax (VAT), income tax, local taxes, and other fiscal levies and duties which shall be itemized in the bid form and reflected in the detailed estimates. Such bids, including said taxes, shall be the basis for bid evaluation and comparison.
- 27.7. If so indicated pursuant to ITB Clause 1.2. Bids are being invited for individual lots or for any combination thereof, provided that all Bids and combinations of Bids shall be received by the same deadline and opened and evaluated simultaneously so as to determine the bid or combination of bids offering the lowest calculated cost to the Procuring Entity. Bid prices quoted shall correspond to all of the requirements specified for each lot. Bid Security as required by ITB Clause 18 shall be submitted for each contract (lot) separately. The basis for evaluation of lots is specified in BDS Clause 27.3.

#### 128. Post Qualification

- 28.1. The BAC shall determine to its satisfaction whether the Bidder that is evaluated as having submitted the Lowest Calculated Bid complies with and is responsive to all the requirements and conditions specified in **ITB** Clauses 5, 12, and 13.
- 28.2. Within a non-extendible period of five (5) calendar days from receipt by the Bidder of the notice from the BAC that it submitted the Lowest Calculated Bid, the Bidder shall submit its latest income and business tax returns filed and paid through the BIR Electronic Filing and Payment System (eFPS) and other appropriate licenses and permits required by law and stated in the <u>BDS.</u>

Failure to submit any of the post-qualification requirements on time, or a finding against the veracity thereof, shall disqualify the Bidder for award. Provided in the event that a

finding against the veracity of any of the documents submitted is made, it shall cause the forfeiture of the bid security in accordance with Section 69 of the IRR of RA 9184.

- 28.3. The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted pursuant to **ITB** Clauses 12 and 13, as well as other information as the Procuring Entity deems necessary and appropriate, using a non-discretionary "pass/fail" criterion, which shall be completed within a period of twelve (12) calendar days.
- 28.4. If the BAC determines that the Bidder with the Lowest Calculated Bid passes all the criteria for post-qualification, it shall declare the said bid as the LCRB, and recommend to the HoPE the award of contract to the said Bidder at its submitted price or its calculated bid price, whichever is lower, subject to **ITB** Clause 30.3.
- 28.5. A negative determination shall result in rejection of the Bidder's bid, in which event the Procuring Entity shall proceed to the next Lowest Calculated Bid, with a fresh period to make a similar determination of that Bidder's capabilities to perform satisfactorily. If the second Bidder, however, fails the post qualification, the procedure for post qualification shall be repeated for the Bidder with the next Lowest Calculated Bid, and so on until the LCRB is determined for recommendation of contract award.
- 28.6. Within a period not exceeding fifteen (15) calendar days from the determination by the BAC of the LCRB and the recommendation to award the contract, the HoPE or his duly authorized representative shall approve or disapprove the said recommendation.
- 28.7. In the event of disapproval, which shall be based on valid, reasonable, and justifiable grounds as provided for under Section 41 of the IRR of RA 9184, the HoPE shall notify the BAC and the Bidder in writing of such decision and the grounds for it. When applicable, the BAC shall conduct a post-qualification of the Bidder with the next Lowest Calculated Bid. A request for reconsideration may be filed by the Bidder with the HoPE in accordance with Section 37.1.3 of the IRR of RA 9184.

#### 129. Reservation Clause

- 29.1. Notwithstanding the eligibility or post-qualification of a Bidder, the Procuring Entity concerned reserves the right to review its qualifications at any stage of the procurement process if it has reasonable grounds to believe that a misrepresentation has been made by the said Bidder, or that there has been a change in the Bidder's capability to undertake the project from the time it submitted its eligibility requirements. Should such review uncover any misrepresentation made in the eligibility and bidding requirements, statements or documents, or any changes in the situation of the Bidder which will affect its capability to undertake the project so that it fails the preset eligibility or bid evaluation criteria, the Procuring Entity shall consider the said Bidder as ineligible and shall disqualify it from submitting a bid or from obtaining an award or contract.
- 29.2. Based on the following grounds, the Procuring Entity reserves the right to reject any and all Bids, declare a Failure of Bidding at any time prior to the contract award, or not

to award the contract, without thereby incurring any liability, and make no assurance that a contract shall be entered into as a result of the bidding:

- (a) If there is *prima facie* evidence of collusion between appropriate public officers or employees of the Procuring Entity, or between the BAC and any of the Bidders, or if the collusion is between or among the Bidders themselves, or between a Bidder and a third party, including any act which restricts, suppresses or nullifies or tends to restrict, suppress or nullify competition;
- (b) If the Procuring Entity's BAC is found to have failed in following the prescribed bidding procedures; or
- (c) For any justifiable and reasonable ground where the award of the contract will not redound to the benefit of the GOP as follows:
  - If the physical and economic conditions have significantly changed so as to render the project no longer economically, financially or technically feasible as determined by the HoPE;
  - (ii) If the project is no longer necessary as determined by the HoPE; and
  - (iii) If the source of funds for the project has been withheld or reduced through no fault of the Procuring Entity.
- 29.3. In addition, the Procuring Entity may likewise declare a failure of bidding when:
  - (a) No bids are received;
  - (b) All prospective bidders are declared ineligible;
  - (c) All bids fail to comply with all the bid requirements or fail post-qualification; or
  - (d) The Bidder with the LCRB refuses, without justifiable cause, to accept the award of contract, and no award is made in accordance with Section 40 of the IRR of RA 9184.

#### E. Award of Contract

#### 130. Contract Award

- 30.1. Subject to **ITB** Clause 28, the HoPE or its duly authorized representative shall award the contract to the Bidder whose bid has been determined to be the LCRB.
- 30.2. Prior to the expiration of the period of bid validity, the Procuring Entity shall notify the successful Bidder in writing that its bid has been accepted, through a Notice of Award duly received by the Bidder or its representative personally or by registered mail or electronically, receipt of which must be confirmed in writing within two (2) days by the

Bidder with the LCRB and submitted personally or sent by registered mail or electronically to the Procuring Entity.

- 30.3. Notwithstanding the issuance of the Notice of Award, award of contract shall be subject to the following conditions:
  - (a) Submission of valid PCAB license and registration for the type and cost of the contract to be bid for foreign bidders when the Treaty or International or Executive Agreement expressly allows submission of the PCAB license and registration for the type and cost of the contract to be bid as a pre-condition to the Award, within ten (10) calendar days from receipt of the Notice of Award:
  - (b) Posting of the performance security in accordance with **ITB** Clause 32;
  - (c) Signing of the contract as provided in **ITB** Clause 31; and
  - (d) Approval by higher authority, if required, as provided in Section 37.3 of the IRR of RA 9184.

#### 131. Signing of the Contract

- 31.1. At the same time as the Procuring Entity notifies the successful Bidder that its bid has been accepted, the Procuring Entity shall send the Contract Form to the Bidder, which Contract has been provided in the Bidding Documents, incorporating therein all agreements between the parties.
- 31.2. Within ten (10) calendar days from receipt of the Notice of Award, the successful Bidder shall post the required performance security, sign and date the contract and return it to the Procuring Entity.
- 31.3. The Procuring Entity shall enter into contract with the successful Bidder within the same ten (10) calendar day's period provided that all the documentary requirements are complied with.
- 31.4. The following documents shall form part of the contract:
  - (a) Contract Agreement;
  - (b) Bidding Documents;
  - (c) Winning Bidder's bid, including the Technical and Financial Proposals, and all other documents/statements submitted (*e.g.*, Bidder's response to request for clarifications on the bid), including corrections to the bid, if any, resulting from the Procuring Entity's bid evaluation;
  - (d) Performance Security;

- (e) Notice of Award of Contract; and
- (f) Other contract documents that may be required by existing laws and/or specified in the **BDS**.

#### 132. Performance Security

- 32.1. To guarantee the faithful performance by the winning Bidder of its obligations under the contract, it shall post a performance security within a maximum period of ten (10) calendar days from the receipt of the Notice of Award from the Procuring Entity and in no case later than the signing of the contract.
- 32.2. The Performance Security shall be denominated in Philippine Pesos and posted in favor of the Procuring Entity in an amount not less than the percentage of the total contract price in accordance with the following schedule:

	Form of Performance Security	Amount of Performance Security (Not less than the Percentage of the Total Contract Price)
(a)	Cash or cashier's/manager's check issued by a Universal or Commercial Bank. For biddings conducted by the LGUs, the Cashier's/Manager's Check may be issued by other banks certified by the BSP as	
	authorized to issue such financial instrument.	
(b)	Bank draft/guarantee or irrevocable letter of credit issued by a Universal or Commercial Bank: Provided, however, that it shall be confirmed or authenticated by a Universal or Commercial Bank, if issued by a foreign bank.	Ten percent (10%)
	For biddings conducted by the LGUs, Bank Draft/Guarantee, or Irrevocable Letter of Credit may be issued by other banks certified by the BSP as authorized to issue such financial instrument	

<ul> <li>(c) Surety bond callable upon demand issued by a surety or insurance company duly certified by the Insurance Commission as authorized to issue such security.</li> </ul>	Thirty percent (30%)
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32.3. Failure of the successful Bidder to comply with the above-mentioned requirement shall constitute sufficient ground for the annulment of the award and forfeiture of the bid security, in which event the Procuring Entity shall have a fresh period to initiate and complete the post qualification of the second Lowest Calculated Bid. The procedure shall be repeated until LCRB is identified and selected for recommendation of contract award. However if no Bidder passed post-qualification, the BAC shall declare the bidding a failure and conduct a re-bidding with re-advertisement, if necessary.

#### 133. Notice to Proceed

Within seven (7) calendar days from the date of approval of the Contract by the appropriate government approving authority, the Procuring Entity shall issue the Notice to Proceed (NTP) together with a copy or copies of the approved contract to the successful Bidder. All notices called for by the terms of the contract shall be effective only at the time of receipt thereof by the successfulBidder.

#### 34. Protest Mechanism

Decision of	the procuring	entity at any	stage o	f the	procurement	process	may	be question	oned in
accordance	with	Sections	55	of	the	IRR	of	RA	9184.

# **SECTION III**

### **Bid Data Sheet**
# **Bid Data Sheet**

ITB Clause	
1.1	The Procuring Entity is the Bases Conversion and Development Authority (BCDA).
1.2	The name of the Contract is <b>Construction of New Clark City Connecting Road to</b> Industrial Park
	The contract is to be bid under Public Bidding No. 20-038-1.
2	The Funding Source is:
	GAA in the amount of Php 2,209,817,035.79 <u>inclusive of all applicable taxes and fees.</u>
	The name of the Project is Construction of New Clark City Connecting Road to Industrial Park
	Terms of payment will be composed of:
	<ul> <li>a) 10% advance/mobilization payment; and</li> <li>b) Progress Payments</li> </ul>
3.1	No further instructions.
5.1	Prospective bidders must have at least a license category "AAA" and a license classification "Large B" from the Philippine Contractors Accreditation Board (PCAB) for General Engineering (GE-1). The PCAB license must be valid and effective at the time of submission of the bid.
5.2	Bidding is restricted to eligible bidders as defined in ITB Clause 5.1.
5.4(b)	No further instructions.
	For this purpose, similar contracts shall refer to completed road and/or bridge projects.
8.1	The Bidder may subcontract a maximum of fifty percent (50%) of the Works subject to prior written approval of <u>Procuring Entity.</u>
8.2	Subcontractors shall comply with the eligibility criteria specified in ITB Clause 5.1.
9.1(a)	The Procuring Entity will hold a pre-bid conference for this Project on October 28, 2020 - 10:00AM, at the <u>PS Conference Room, Procurement Service – DBM,</u> <u>Cristobal St., Paco, Manila.</u>
9.1(b)	The deadline for receipt of submission of bids is on November 27, 2020 – 10:00AM.
	Bids shall be submitted at:
	Bids and Awards Committee I Bid Box

	Procurement Service – Department of Budget and Management R.R. Road, Cristobal St., Paco, Manila		
10.1	Requests for clarification must be addressed to:		
	Chairperson Bids and Awards Committee I Procurement Service – Department of Budget and Managemen	t	
12.1	No further instructions.		
12.1(a)(i)	The valid PhilGEPS Certificate of Registration (Platinum Membership) shall reflect the updated eligibility documents. Should the Annex A of said Certificate reflect not updated documents, the bidder shall submit, together with the Certificate, certified true copies of the updated documents.		
	Notwithstanding the above requirements, the bidder may opt to submit the following eligibility documents in lieu of the submission of the PhilGEPS Certificate of Registration (Platinum Membership):		
	a. Business Registration;		
	b. Mayor's Permit for 2020 (submission of the bidder's recently expired mayor's permit and the Official Receipt as proof that the bidder has applied for renewal of the permit within the prescribed period is allowed; Provided that, the current and valid mayor's permit, as renewed, be submitted or presented by the bidder with the Lowest Calculated and Responsive Bid prior to award of contract, as this would enhance competition and facilitate the procurement process.)		
	c. 2019 Audited Financial Statement;		
	d. Valid and current Tax Clearance Tax clearance per Executive Order 398, Series of 2005, as finally reviewed and approved by the BIR ; and		
	e. Valid and Applicable PCAB License		
	In the latter case, the bidder shall submit a valid PhilGEPS Registration Certificate as part of post-qualification documents.		
12.1(a)(iii)	No other acceptable proof of registration is recognized.		
12.1(b)(ii.2)	List of Minimum Key Personnel Nominated/To Be Assigned	I to the Project	
	No. Key Personnel	Minimum Required	
	1. Project Manager (Must be a Licensed Civil Engineer with 10 year minimum experience as Project Manager for road and bridge projects)	1	
	2. Project Engineer (Must be a Licensed Civil Engineer with 5 year minimum experience as Project Engineer for road and bridge projects)	1	
	3. Bridge/Structural Engineer (Must be a Licensed Civil Engineer with 5 year minimum experience as Bridge/Structural Engineer)	1	

4.	QuantityEngineer (Must be a Licensed Civil Engineer with 5 year minimum experience as Quantity Engineer for road and bridge projects)	2
5.	Materials Engineer II (Must be a DPWH Accredited Materials Engineer II with 5 year minimum experience as Material Engineer)	1
6.	Site Engineer (Must be a Licensed Civil Engineer with 5 year minimum experience as Site Engineer)	6
7.	ElectricalEngineer (Must be a Registered Electrical Engineer with 5 year minimum experience as Electrical Engineer)	1
8.	Health and Safety Officer (Must be a DOLE Accredited Safety Officer with 5 year minimum experience as Safety Officer)	1
9.	Drainage Engineer (Must be a Licensed Civil Engineer with 5 year minimum experience as Drainage Engineer position)	1
10.	Geodetic Engineer (Must be a Licensed Geodetic Engineer with 5 year minimum experience as Geodetic Engineer position)	1
The bid	tal control limits of the project as against to the des ary surveys. der is not allowed to combine work experiences of two meet the required minimum years of experience.	or more personnel in
The bid	der is not allowed to nominate a person more than once	).
Note: 7 documo 1.	This List must be supported by individual resumes ents: Individual resumes to show proof of the following a. that the proposed personnel meets the	the following g: required
relative inclusiv Project Manag	e experience b. list of projects handled with the corresponding ve years of experience (e.g. Construction of Roads er. 2012-2017)	g position and its and/or Bridges,
1.	Photocopy of PRC Licenses/DOLE-OHSC/DPWH A	Accreditation.
	Expired PRC License may be accepted provided the renewal of application is attached. Valid and renewal of all key personnel assigned must be submitted Qualification.	nat proof for the wed PRC license during Post-

12.1(b)(ii.3)			
	No	List of minimum equipment requirement.	QUANTITY
	NO	I TPE OF EQUIPMENT	QUANTITY
	1	Backhoe Hydraulic Excavator, W.M. 0.50 cu.m., 128 hp	2
	2	Backhoe Hydraulic Excavator, W.M. 0.92 cu.m., 130 hp	2
	3	Cargo Truck, 6-8 tonner, 195 np.	2
	4	Cargo Truck, 11-12 tonner, 290 hp.	2
	6	Concrete Finisher/Paver, 120 hn	1
	7	Concrete Pump/Trailer/Truck Mounted (Cont.) 8 round 3-5 cu m/hr	2
	8	Crawler Crane, 51-60 tones, 275 hp.	1
	9	Crawler Tractor with Dozer, 105 hp.	1
	10	Dump Truck, 9-11.50 cu.yd., 380 hp.	10
	11	Motorize Grader, 125 hp.	2
	12	Pumpcrete, , 45.87 cu.m/fr. 180 hp.	1
	13	Service Truck	1
	14	Trailer Dolly, Low Bed, 15 tonnes	1
	15	Transit Mixer, 6.5-7.5 cu.yd.	10
	16	Truck Mounted Crane, Hydraulic Telescopic Broom, 51-60 tonnes	2
	17	Vibratory Roller (Tandem Smooth Drum) 10tonnes, 99 hp.	2
	18	Water Truck w/ water pump, 16000 liters, 360 hp.	2
	19	Wheel Loader, 2.29 cu.m., 150 np.	4
	20	Concrete Batching Plant, , ou cu.m./hour	I
	Accept 1. if ow	able proof of ownership/leased/under purchase agreement: vned, supported by proof of ownership such as but not limited to:	
		Official Receipt	
		• Deed of Sale	
		• OR/CR	
		• Sales Invoice showing payment of VAT	
		Proforma Invoice supported by a Sales Invoice	
		• Letter of Credit from bank with attached Purchase Ord Sales Invoice	er supported by a
		Acknowledgement Receipt from Supplier	
		Commercial Receipt/Commercial Invoice	
		Original Invoice with attached Packing List	
Bill of Lading			
		Collection Receipt	
		• Delivery Receipt and certification by the bidder of availability of equipment for t project:	he duration of the
	<ol> <li>If lease, Lease Agreement between lessor and lessee, Proof of Ownership of the Lesson to be included in the Technical Proposal and certification of availability of equipment from the equipment lessor for the duration of the project; or</li> <li>if under purchase agreement, Purchase Agreement between the bidder and the owner Certification of availability of equipment from the vendor for the duration of the project.</li> </ol>		
13.1(b)	In add Financ	ition to the Bid Form and Bill of Quantities, the following shall ial Component:	be included in the

	<ol> <li>Detailed estimates , including a summary sheet (Dayworks Form) indicating the unit prices of construction materials, labor rates, and equipment rentals used in coming up with the Bid considering 12% VAT; and</li> </ol>	
	2. Cash flow by quarter or payment schedule.	
	<ol> <li>Notes:         <ol> <li>Bidders with incomplete submission and/or omissions shall be disqualified.</li> <li>In filling out the bid form, bidders shall provide discount offer in the form of amount, in figures and in words, including its application and methodology. In case of no discount offered, bidders shall state "None".</li> </ol> </li> <li>For the bill of quantities, in case of any discrepancy/ies between the editable (Excel) version and PDF version, the latter shall govern. The BAC and the Procuring Entity are not responsible for any omissions made by the bidder in accomplishing this form.</li> </ol>	
13.2(a)	The ABC is <b>Php2,209,817,035.79</b> inclusive of applicable taxes and fees. Any bid with a financial component exceeding this amount shall not be accepted.	
13.2(b)	No further instructions.	
14.2	No further instructions.	
16.1	The bid prices shall be quoted in Philippine Pesos.	
16.3	No further instructions.	
17.1	The Bid Validity shall be valid for One Hundred Twenty (120) Calendar Days from the date of opening of bids.	
18.1	The bid security shall be in the form of a Bid Securing Declaration or any of the following forms and amounts:	
	<ol> <li>The amount of not less than Forty-Four Million One Hundred Ninety Six Thousand Three Hundred Forty and 72/100 Pesos (P44,196,340.72)if bid security is in cash, cashier's/manager's check, bank draft/guarantee or irrevocable letter of credit;</li> </ol>	
	<ol> <li>The amount of not less than One Hundred Ten Million Four Hundred Ninety Thousand Eight Hundred Fifty One and 79/100 Pesos (P110,490,851.79) if bid security is in Surety Bond.</li> </ol>	
18.2	The Bid Security shall be valid for One Hundred Twenty (120) Calendar Days from the date of opening of bids.	
20.3	Each Bidder shall submit one (1) original hardcopy and two (2) hardcopies of its bid.	
21	The address for submission of bids is:	
	Bids and Awards Committee I Secretariat Office Procurement Service – Department of Budget and Management 2nd Floor, PS Complex, RR Road	

	Cristobal St., Paco, Manila	
	The deadline for submission of bids is on <b>November 27, 2020 at 10:00AM.</b>	
24.1	The place of bid opening is:	
	Procurement Service Conference Room 2nd Floor, PS Complex, RR Road Cristobal St., Paco, Manila	
	The bid opening will be held immediately after the deadline of submission of bids.	
	During the opening of bids only the authorized representative shall be allowed to assist in the opening of bids. In case the authorized representative is not present, any representative of the authorized representative may be allowed to assist in the opening of bids provided that a separate written authorization from the authorized representative shall be presented for the purpose. Provided that the authorized representative is duly authorized to issue such further authority and the same is reflected in the Board Resolution and/or Secretary's Certificate.	
24.2	No further instructions.	
24.3	No further instructions.	
27.3(a)	Partial bid is not allowed. The infrastructure project is packaged in a single lot and the lot shall not be divided into sub-lots for the purpose of bidding, evaluation, and contract award.	
27.4	No further instructions.	
28.2	No licenses and permits required.	
	For purposes of Post-qualification the following document(s) shall be required to be submitted within five (5) calendar days from receipt of notice from the BAC:	
	1. Income Tax Returns for year 2019 (BIR Form 1701 or 1702);	
	2. Latest Value Added Tax Returns (Forms 2550M and 2550Q) or Percentage Tax Returns (Form 2551M) before the deadline of the submission of bids for the last siz (6) months (April to September 2020)	
	The income tax and business tax returns stated above should have been filed through the Electronic Filing and Payment System (eFPS).	
	3. Proof of Ongoing and Awarded Contracts but not yet started contracts as identified in the Statement of All Ongoing Government & Private Contracts, which shall include the following:	
	a. Notice to Proceed or equivalent; and	

	b. Certificate of accomplishments signed by the Owner or Owner's Project Engineer or in case the project was just awarded or still in the mobilization stage, a certification in lieu of the certificate of accomplishment signed by the Owner or Owner's Project Engineer should be submitted.	
	4. Valid PhilGEPS Certificate of Registration (Platinum	
	Membership), if the bidder opted to submit the eligibility documents in lieu of the submission of the PhilGEPS Certificate of Registration (Platinum Membership) during opening of bids.	
	5. Valid PRC Licenses of Key Personnel Assigned (if the bidder opt to submit expired PRC license together with the proof of renewal during the opening of bids)	
	6. One (1) softcopy of its original bid in PDF format (in case of discrepancies and technical issue in the submitted drive, it shall not be a ground for disqualification and the original hardcopy shall prevail in terms of its contents)	
	N.B. Documents submitted during post-qualification as part of post qualific documents must be certified by the authorized representative to be true copy/ies the original.	
31.4(f)	List of additional contract documents relevant to the Project:	
	<ol> <li>Construction Schedule and S-Curve;</li> <li>Manpower Schedule;</li> <li>Construction Methods;</li> <li>Equipment Utilization Schedule; and</li> <li>Construction Safety and Health Program approved by the Department Of Labor and Employment (DOLE).</li> </ol>	

# **SECTION IV**

**General Conditions of the Contract** 

# 1. Definitions

For purposes of this Clause, boldface type is used to identify defined terms.

- 1.1. The **Arbiter** is the person appointed jointly by the Procuring Entity and the Contractor to resolve disputes in the first instance, as provided for in **GCC** Clause 21.
- 1.2. **Bill of Quantities** refers to a list of the specific items of the Work and their corresponding unit prices, lump sums, and/or provisional sums.
- 1.3. The **Completion Date** is the date of completion of the Works as certified by the Procuring Entity's Representative, in accordance with **GCC** Clause 49.
- 1.4. The **Contract** is the contract between the Procuring Entity and the Contractor to execute, complete, and maintain the Works.
- 1.5. The **Contract Effectivity Date** is the date of signing of the Contract. However, the contractor shall commence execution of the Works on the Start Date as defined in GCC Clause 1.28
- 1.6. The **Contract Price** is the price stated in the Notice of Award and thereafter to be paid by the Procuring Entity to the Contractor for the execution of the Works in accordance with this Contract.
- 1.7. **Contract Time Extension**is the allowable period for the Contractor to complete the Works in addition to the original Completion Date stated in this Contract.
- 1.8. The **Contractor** is the juridical entity whose proposal has been accepted by the Procuring Entity and to whom the Contract to execute the Work was awarded.
- 1.9. The **Contractor's Bid** is the signed offer or proposal submitted by the Contractor to the Procuring Entity in response to the Bidding Documents.
- 1.10. **Days** are calendar days; months are calendar months.
- 1.11. **Day works** are varied work inputs subject to payment on a time basis for the Contractor's employees and Equipment, in addition to payments for associated Materials and Plant.
- 1.12. A **Defect** is any part of the Works not completed in accordance with the Contract.
- 1.13. The **Defects Liability Certificate** is the certificate issued by Procuring Entity's Representative upon correction of defects by the Contractor.
- 1.14. The **Defects Liability Period** is the one year period between contract completion and final acceptance within which the Contractor assumes the responsibility to undertake the repair of any damage to the Works at his own expense.
- 1.15. **Drawings** are graphical presentations of the Works. They include all supplementary details, shop drawings,calculations, and other information provided or approved for the execution of this Contract.

- 1.16. **Equipment** refers to all facilities, supplies, appliances, materials or things required for the execution and completion of the Work provided by the Contractor and which shall not form or are not intended to form part of the Permanent Works.
- 1.17. The **Intended Completion Date** refers to the date specified in the <u>SCC</u>when the Contractor is expected to have completed the Works. The Intended Completion Date may be revised only by the Procuring Entity's Representative by issuing an extension of time or an acceleration order.
- 1.18. **Materials** are all supplies, including consumables, used by the Contractor for incorporation in the Works.
- 1.19. The **Notice to Proceed** is a written notice issued by the Procuring Entity or the Procuring Entity's Representative to the Contractor requiring the latter to begin the commencement of the work not later than a specified or determinable date.
- 1.20. **Permanent Works**are all permanent structures and all other project features and facilities required to be constructed and completed in accordance with this Contract which shall be delivered to the Procuring Entity and which shall remain at the Site after the removal of all Temporary Works.
- 1.21. **Plant** refers to the machinery, apparatus, and the like intended to form an integral part of the Permanent Works.
- 1.22. The **Procuring Entity** is the party who employs the Contractor to carry out the Works stated in the <u>SCC</u>.
- 1.23. The **Procuring Entity's Representative** refers to the Head of the Procuring Entity or his duly authorized representative, identified in the <u>SCC</u>, who shall be responsible for supervising the execution of the Works and administering this Contract.
- 1.24. The **Site** is the place provided by the Procuring Entity where the Works shall be executed and any other place or places which may be designated in the <u>SCC</u>, or notified to the Contractor by the Procuring Entity's Representative as forming part of the Site.
- 1.25. **Site Investigation Reports** are those that were included in the Bidding Documents and are factual and interpretative reports about the surface and subsurface conditions at the Site.
- 1.26. **Slippage** is a delay in work execution occurring when actual accomplishment falls below the target as measured by the difference between the scheduled and actual accomplishment of the Work by the Contractor as established from the work schedule. This is actually described as a percentage of the whole Works.
- 1.27. **Specifications** mean the description of Works to be done and the qualities of materials to be used, the equipment to be installed and the mode of construction.
- 1.28. The **Start Date**, as specified in the <u>SCC</u>, is the date when the Contractor is obliged to commence execution of the Works. It does not necessarily coincide with any of the Site Possession Dates.

- 1.29. A **Subcontractor** is any person or organization to whom a part of the Works has been subcontracted by the Contractor, as allowed by the Procuring Entity, but not any assignee of such person.
- 1.30. **Temporary Works** are works designed, constructed, installed, and removed by the Contractor that are needed for construction or installation of the Permanent Works.
- 1.31. Work(s) refer to the Permanent Works and Temporary Works to be executed by the Contractor in accordance with this Contract, including (i) the furnishing of all labor, materials, equipment and others incidental, necessary or convenient to the complete execution of the Works; (ii) the passing of any tests before acceptance by the Procuring Entity's Representative; (iii) and the carrying out of all duties and obligations of the Contractor imposed by this Contract as described in the <u>SCC</u>.

# 2. Interpretation

- 2.1 In interpreting the Conditions of Contract, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning under the language of this Contract unless specifically defined. The Procuring Entity's Representative will provide instructions clarifying queries about the Conditions of Contract.
- 2.2 If sectional completion is specified in the <u>SCC</u>, references in the Conditions of Contract to the Works, the Completion Date, and the Intended Completion Date apply to any Section of the Works (other than references to the Completion Date and Intended Completion Date for the whole of the Works).
- 2.3 The documents forming this Contract shall be interpreted in the following order of priority:
  - a) Contract Agreement;
  - b) Bid Data Sheet;
  - c) Instructions to Bidders;
  - d) Addenda to the Bidding Documents;
  - e) Special Conditions of Contract;
  - f) General Conditions of Contract;
  - g) Specifications;
  - h) Bill of Quantities; and
  - i) Drawings.

# 3. Governing Language and Law

3.1 This Contract has been executed in the English language, which shall be the binding and controlling language for all matters relating to the meaning or interpretation of this

Contract. All correspondence and other documents pertaining to this Contract which are exchanged by the parties shall be written in English.

3.2 This Contract shall be interpreted in accordance with the laws of the Republic of the Philippines.

# 4. Communications

Communications between parties that are referred to in the Conditions shall be effective only when in writing. A notice shall be effective only when it is received by the concerned party.

# 5. Possession of Site

- 5.1 On the date specified in the **SCC**, the Procuring Entity shall grant the Contractor possession of so much of the Site as may be required to enable it to proceed with the execution of the Works. If the Contractor suffers delay or incurs cost from failure on the part of the Procuring Entity to give possession in accordance with the terms of this clause, the Procuring Entity's Representative shall give the Contractor a Contract Time Extension and certify such sum as fair to cover the cost incurred, which sum shall be paid by Procuring Entity.
- 5.2 If possession of a portion is not given by the date stated in the <u>SCC</u> Clause 5.1, the Procuring Entity will be deemed to have delayed the start of the relevant activities. The resulting adjustments in contract time to address such delay shall be in accordance with **GCC** Clause 47.
- 5.3 The Contractor shall bear all costs and charges for special or temporary right-of-way required by it in connection with access to the Site. The Contractor shall also provide at his own cost any additional facilities outside the Site required by it for purposes of the Works.
- 5.4 The Contractor shall allow the Procuring Entity's Representative and any person authorized by the Procuring Entity's Representative access to the Site and to any place where work in connection with this Contract is being carried out or is intended to be carried out.

# 6. The Contractor's Obligations

- 6.1 The Contractor shall carry out the Works properly and in accordance with this Contract. The Contractor shall provide all supervision, labor, Materials, Plant and Contractor's Equipment, which may be required. All Materials and Plant on Site shall be deemed to be the property of the Procuring Entity.
- 6.2 The Contractor shall commence execution of the Works on the Start Date and shall carry out the Works in accordance with the Program of Work submitted by the Contractor, as updated with the approval of the Procuring Entity's Representative, and complete them by the Intended Completion Date.
- 6.3 The Contractor shall be responsible for the safety of all activities on the Site.

- 6.4 The Contractor shall carry out all instructions of the Procuring Entity's Representative that comply with the applicable laws where the Site is located.
- 6.5The Contractor shall employ the key personnel named in the Schedule of Key Personnel, as referred to in the <u>SCC</u>, to carry out the supervision of the Works. The Procuring Entity will approve any proposed replacement of key personnel only if their relevant qualifications and abilities are equal to or better than those of the personnel listed in the Schedule.
- 6.6 If the Procuring Entity's Representative asks the Contractor to remove a member of the Contractor's staff or work force, for justifiable cause, the Contractor shall ensure that the person leaves the Site within seven (7) days and has no further connection with the Work in this Contract.
- 6.7 During Contract implementation, the Contractor and his subcontractors shall abide at all times by all labor laws, including child labor related enactments, and other relevant rules.
- 6.8 The Contractor shall submit to the Procuring Entity for consent the name and particulars of the person authorized to receive instructions on behalf of the Contractor.
- 6.9 The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities, and the Procuring Entity between the dates given in the schedule of other contractors particularly when they shall require access to the Site. The Contractor shall also provide facilities and services for them during this period. The Procuring Entity may modify the schedule of other contractors, and shall notify the Contractor of any such modification thereto.
- 6.10 Should anything of historical or other interest or of significant value be unexpectedly discovered on the Site, it shall be the property of the Procuring Entity. The Contractor shall notify the Procuring Entity's Representative of such discoveries and carry out the Procuring Entity's Representative's instructions in dealing with them.

# 7. Performance Security

- 7.1 Within ten (10) calendar days from receipt of the Notice of Award from the Procuring Entity but in no case later than the signing of the contract by both parties, the Contractor shall furnish the performance security in any of the forms prescribed in **ITB** Clause 32.2.
- 7.2 The performance security posted in favor of the Procuring Entity shall be forfeited in the event it is established that the Contractor is in default in any of its obligations under the Contract.
- 7.3 The performance security shall remain valid until issuance by the Procuring Entity of the Certificate of Final Acceptance.
- 7.4 The performance security may be released by the Procuring Entity and returned to the Contractor after the issuance of the Certificate of Final Acceptance subject to the following conditions:

- a)There are no pending claims against the Contractor or the surety company filed by the Procuring Entity;
- b)The Contractor has no pending claims for labor and materials filed against it; and
- c)Other terms specified in the SCC.
- 7.5 The Contractor shall post an additional performance security following the amount and form specified in ITB Clause 31.2 to cover any cumulative increase of more than ten percent (10%) over the original value of the contract as a result of amendments to order or change orders, extra work orders and supplemental agreements, as the case may be. The Contractor shall cause the extension of the validity of the performance security to cover approved contract time extensions.
- 7.6 In case of a reduction in the contract value or for partially completed Works under the contract which are usable and accepted by the Procuring Entity the use of which, in the judgment of the implementing agency or the Procuring Entity, will not affect the structural integrity of the entire project, the Procuring Entity shall allow a proportional reduction in the original performance security, provided that any such reduction is more than ten percent (10%) and that the aggregate of such reductions is not more than fifty percent (50%) of the original performance security.
- 7.7 Unless otherwise indicated in the <u>SCC</u>, the Contractor, by entering into the Contract with the Procuring Entity, acknowledges the right of the Procuring Entity to institute action pursuant to Act 3688 against any subcontractor be they an individual, firm, partnership, corporation, or association supplying the Contractor with labor, materials and/or equipment for the performance of this Contract.

# 8. Subcontracting

- 8.1 Unless otherwise indicated in the <u>SCC</u>,the Contractor cannot subcontract Works more than the percentage specified in **BDS** Clause 8.1.
- 8.2 Subcontracting of any portion of the Works does not relieve the Contractor of any liability or obligation under this Contract. The Contractor will be responsible for the acts, defaults, and negligence of any subcontractor, its agents, servants or workmen as fully as if these were the Contractor's own acts, defaults, or negligence, or those of its agents, servants or workmen.
- 8.3 If subcontracting is allowed. The contractor may identify its subcontractor during contract implementation stage. Subcontractors disclosed and identified during the bidding may be changed during the implementation of this Contract. In either case, subcontractors must submit the documentary requirements under ITB Clause 12 and comply with the eligibility criteria specified in the **BDS**. In the event that any subcontractor is found by any Procuring Entity to be eligible, the subcontracting of such portion of the Works shall be disallowed.

# 9. Liquidated Damages

- 9.1 The Contractor shall pay liquidated damages to the Procuring Entity for each day that the Completion Date is later than the Intended Completion Date. The applicable liquidated damages is at least one-tenth (1/10) of a percent of the cost of the unperformed portion for every day of delay. The Procuring Entity shall deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor's liabilities. Once the cumulative amount of liquidated damages reaches ten percent (10%) of the amount of this Contract, the Procuring Entity may rescind or terminate this Contract, without prejudice to other courses of action and remedies available under the circumstances.
- 9.2 If the Intended Completion Date is extended after liquidated damages have been paid, the Engineer of the Procuring Entity shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate.

# 10. Site Investigation Reports

The Contractor, in preparing the Bid, shall rely on any Site Investigation Reports referred to in the <u>SCC</u>supplemented by any information obtained by the Contractor.

# 11. The Procuring Entity, Licenses and Permits

The Procuring Entity shall, if requested by the Contractor, assist him in applying for permits, licenses or approvals, which are required for the Works.

# 12. Contractor's Risk and Warranty Security

- 12.1 The Contractor shall assume full responsibility for the Works from the time project construction commenced up to final acceptance by the Procuring Entity and shall be held responsible for any damage or destruction of the Works except those occasioned by *force majeure*. The Contractor shall be fully responsible for the safety, protection, security, and convenience of his personnel, third parties, and the public at large, as well as the Works, Equipment, installation, and the like to be affected by his construction work.
- 12.2 The defects liability period for infrastructure projects shall be one year from contract completion up to final acceptance by the Procuring Entity. During this period, the Contractor shall undertake the repair works, at his own expense, of any damage to the Works on account of the use of materials of inferior quality within ninety (90) days from the time the HoPEhas issued an order to undertake repair. In case of failure or refusal to comply with this mandate, the Procuring Entity shall undertake such repair works and shall be entitled to full reimbursement of expenses incurred therein upon demand.
- 12.3 Unless otherwise indicated in the <u>SCC</u>, in case the Contractor fails to comply with the preceding paragraph, the Procuring Entity shall forfeit its performance security, subject its property(ies) to attachment or garnishment proceedings, and perpetually disqualify it from participating in any public bidding. All payables of the GoP in his favor shall be offset to recover the costs.
- 12.4 After final acceptance of the Works by the Procuring Entity, the Contractor shall be held responsible for "Structural Defects," *i.e.*, major faults/flaws/deficiencies in one or more key structural elements of the project which may lead to structural failure of the

completed elements or structure, or "Structural Failures," *i.e.*,where one or more key structural elements in an infrastructure facility fails or collapses, thereby rendering the facility or part thereof incapable of withstanding the design loads, and/or endangering the safety of the users or the general public:

- Contractor Where Structural Defects/Failures arise due to faults attributable to improper construction, use of inferior quality/substandard materials, and any violation of the contract plans and specifications, the contractor shall be held liable;
- b) Consultants Where Structural Defects/Failures arise due to faulty and/or inadequate design and specifications as well as construction supervision, then the consultant who prepared the design or undertook construction supervision for the project shall be held liable;
- c) ProcuringEntity's Representatives/Project Manager/Construction Managers and Supervisors – The project owner's representative(s), project manager, construction manager, and supervisor(s) shall be held liable in cases where the Structural Defects/Failures are due to his/their willful intervention in altering the designs and other specifications; negligence or omission in not approving or acting on proposed changes to noted defects or deficiencies in the design and/or specifications; and the use of substandard construction materials in the project;
- d) Third Parties Third Parties shall be held liable in cases where Structural Defects/Failures are caused by work undertaken by them such as leaking pipes, diggings or excavations, underground cables and electrical wires, underground tunnel, mining shaft and the like, in which case the applicable warranty to such structure should be levied to third parties for their construction or restoration works.
- e) Users In cases where Structural Defects/Failures are due to abuse/misuse by the end user of the constructed facility and/or non-compliance by a user with the technical design limits and/or intended purpose of the same, then the user concerned shall be held liable.
- 12.5 The warranty against Structural Defects/Failures, except those occasioned on force majeure, shall cover the period specified in the <u>SCC</u> reckoned from the date of issuance of the Certificate of Final Acceptance by the Procuring Entity.
- 12.6 The Contractor shall be required to put up a warranty security in the form of cash, bank guarantee, letter of credit, GSIS or surety bond callable on demand, in accordance with the following schedule:

Form of Warranty	Amount of Warranty Security Not less than the Percentage (%) of Total Contract Price
a. Cash or letter of credit issued by Universal or Commercial bank: provided, however, that the letter of credit shall be	Five Percent (5%)

confirmed or authenticated by a Universal or Commercial bank, if issued by a foreign bank	
<ul> <li>Bank guarantee confirmed by Universal or Commercial bank: provided, however, that the letter of credit shall be confirmed or authenticated by a Universal or Commercial bank, if issued by a foreign bank</li> </ul>	Ten Percent (10%)
c. Surety bond callable upon demand issued by GSIS or any surety or insurance company duly certified by the Insurance Commission	Thirty Percent (30%)

- 12.7 The warranty security shall be stated in Philippine Pesos and shall remain effective for one year from the date of issuance of the Certificate of Final Acceptance by BCDA, and returned only after the lapse of said one year period.
- 12.8 In case of structural defects/failure occurring during the applicable warranty period provided in **GCC** Clause 12.10, the Procuring Entity shall undertake the necessary restoration or reconstruction works and shall be entitled to full reimbursement by the parties found to be liable for expenses incurred therein upon demand, without prejudice to the filing of appropriate administrative, civil, and/or criminal charges against the responsible persons as well as the forfeiture of the warranty security posted in favor of the Procuring Entity.

# 13. Liability of the Contractor

Subject to additional provisions, if any, set forth in the <u>SCC</u>, the Contractor's liability under this Contract shall be as provided by the laws of the Republic of the Philippines.

# 14. Procuring Entity's Risk

- 14.1 From the Start Date until the Certificate of Final Acceptance has been issued, the following are risks of the Procuring Entity:
- 14.2 The risk of personal injury, death, or loss of or damage to property (excluding the Works, Plant, Materials, and Equipment), which are due to:
  - i. any type of use or occupation of the Site authorized by the Procuring Entity after the official acceptance of the works; or
  - ii. negligence, breach of statutory duty, or interference with any legal right by the Procuring Entity or by any person employed by or contracted to him except the Contractor.
  - iii. The risk of damage to the Works, Plant, Materials, and Equipment to the extent that it is due to a fault of the Procuring Entity or in the Procuring Entity's design, or due to war or radioactive contamination directly affecting the country where the Works are to be executed.

## 15. Insurance

- 15.1 The Contractor shall, under his name and at his own expense, obtain and maintain, for the duration of this Contract, the following insurance coverage:
  - a. Contractor's All Risk Insurance;
  - b. Transportation to the project Site of Equipment, Machinery, and Supplies owned by the Contractor;
  - c. Personal injury or death of Contractor's employees; and
  - d. Comprehensive insurance for third party liability to Contractor's direct or indirect act or omission causing damage to third persons.
- 15.2 The Contractor shall provide evidence to the Procuring Entity's Representative that the insurances required under this Contract have been effected and shall, within a reasonable time, provide copies of the insurance policies to the Procuring Entity's Representative. Such evidence and such policies shall be provided to the Procuring Entity's through the Procuring Entity's Representative.
- 15.3 The Contractor shall notify the insurers of changes in the nature, extent, or program for the execution of the Works and ensure the adequacy of the insurances at all times in accordance with the terms of this Contract and shall produce to the Procuring Entity's Representative the insurance policies in force including the receipts for payment of the current premiums.

The above insurance policies shall be obtained from any reputable insurance company approved by the Procuring Entity's Representative.

- 15.4 If the Contractor fails to obtain and keep in force the insurances referred to herein or any other insurance which he may be required to obtain under the terms of this Contract, the Procuring Entity may obtain and keep in force any such insurances and pay such premiums as may be necessary for the purpose. From time to time, the Procuring Entity may deduct the amount it shall pay for said premiums including twenty five percent (25%) therein from any monies due, or which may become due, to the Contractor, without prejudice to the Procuring Entity exercising its right to impose other sanctions against the Contractor pursuant to the provisions of this Contract.
- 15.5 In the event the Contractor fails to observe the above safeguards, the Procuring Entity may, at the Contractor's expense, take whatever measure is deemed necessary for its protection and that of the Contractor's personnel and third parties, and/or order the interruption of dangerous Works. In addition, the Procuring Entity may refuse to make the payments under **GCC** Clause 40 until the Contractor complies with this Clause.
- 15.6 The Contractor shall immediately replace the insurance policy obtained as required in this Contract, without need of the Procuring Entity's demand, with a new policy issued by a new insurance company acceptable to the Procuring Entity for any of the following grounds:
  - a) The issuer of the insurance policy to be replaced has:

- i. become bankrupt;
- ii. been placed under receivership or under a management committee;
- iii. been sued for suspension of payment; or
- iv. been suspended by the Insurance Commission and its license to engage in business or its authority to issue insurance policies cancelled; or
- v. Where reasonable grounds exist that the insurer may not be able, fully and promptly, to fulfill its obligation under the insurance policy.

## **16. Termination for Default of Contractor**

- 16.1 The Procuring Entity shall terminate this Contract for default when any of the following conditions attend its implementation:
  - i. Due to the Contractor's fault and while the project is on-going, it has incurred negative slippage of fifteen percent (15%) or more in accordance with Presidential Decree 1870, regardless of whether or not previous warnings and notices have been issued for the Contractor to improve his performance;
  - ii. Due to its own fault and after this Contract time has expired, the Contractor incurs delay in the completion of the Work after this Contract has expired; or
  - iii. The Contractor:
    - (ii) abandons the contract Works, refuses or fails to comply with a valid instruction of the Procuring Entity or fails to proceed expeditiously and without delay despite a written notice by the Procuring Entity;
    - does not actually have on the project Site the minimum essential equipment listed on the bid necessary to prosecute the Works in accordance with the approved Program of Work and equipment deployment schedule as required for the project;
    - does not execute the Works in accordance with this Contract or persistently or flagrantly neglects to carry out its obligations under this Contract;
    - (v) neglects or refuses to remove materials or to perform a new Work that has been rejected as defective or unsuitable; or
    - (vi) sub-lets any part of this Contract without approval by the Procuring Entity.
- 16.2 All materials on the Site, Plant, Works, including Equipment purchased and funded under the Contract shall be deemed to be the property of the Procuring Entity if this Contract is rescinded because of the Contractor's default.

# 17. Termination for Default of Procuring Entity

The Contractor may terminate this Contract with the Procuring Entity if the works are completely stopped for a continuous period of at least sixty (60) calendar days through no fault of its own, due to any of the following reasons.

- a) Failure of the Procuring Entity to deliver, within a reasonable time, supplies, materials, right-of-way, or other items it is obligated to furnish under the terms of this Contract; or
- b) The prosecution of the Work is disrupted by the adverse peace and order situation, as certified by the Armed Forces of the Philippines Provincial Commander and approved by the Secretary of National Defense.

# 18. Termination for Other Causes

- 18.1 The Procuring Entity may terminate this Contract, in whole or in part, at any time for its convenience. The HoPE may terminate this Contract for the convenience of the Procuring Entity if he has determined the existence of conditions that make Project Implementation economically, financially or technically impractical and/or unnecessary, such as, but not limited to, fortuitous event(s) or changes in law and National Government policies.
- 18.2 The Procuring Entity or the Contractor may terminate this Contract if the other party causes a fundamental breach of this Contract.
- 18.3 Fundamental breaches of Contract shall include, but shall not be limited to, the following:
  - a) The Contractor stops work for twenty eight (28) days when no stoppage of work is shown on the current Program of Work and the stoppage has not been authorized by the Procuring Entity's Representative;
  - b) The Procuring Entity's Representative instructs the Contractor to delay the progress of the Works, and the instruction is not withdrawn within twenty eight (28) days;
  - c) The Procuring Entity shall terminate this Contract if the Contractor is declared bankrupt or insolvent as determined with finality by a court of competent jurisdiction. In this event, termination will be without compensation to the Contractor, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the Procuring Entity and/or the Contractor. In the case of the Contractor's insolvency, any Contractor's Equipment which the Procuring Entity instructs in the notice is to be used until the completion of the Works;
  - A payment certified by the Procuring Entity's Representative is not paid by the Procuring Entity to the Contractor within eighty four (84) days from the date of the Procuring Entity's Representative's certificate;

- e) The Procuring Entity's Representative gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Procuring Entity's Representative;
- f) The Contractor does not maintain a Security, which is required;
- g) The Contractor has delayed the completion of the Works by the number of days for which the maximum amount of liquidated damages can be paid, as defined in the **GCC** Clause 9; and
- h) In case it is determined prima facie by the Procuring Entity that the Contractor has engaged, before or during the implementation of the contract, in unlawful deeds and behaviors relative to contract acquisition and implementation, such as, but not limited to, the following:
- i. corrupt, fraudulent, collusive, coercive, and obstructive practices as defined in **ITB** Clause 3.1., unless otherwise specified in the **SCC**;
- ii. drawing up or using forged documents;
- iii. using adulterated materials, means or methods, or engaging in production contrary to rules of science or the trade; and
- iv. any other act analogous to the foregoing.
- 18.4 The Funding Source or the Procuring Entity, as appropriate, will seek to impose the maximum civil, administrative and/or criminal penalties available under the applicable law on individuals and organizations deemed to be involved with corrupt, fraudulent, or coercive practices.
- 18.5 When persons from either party to this Contract gives notice of a fundamental breach to the Procuring Entity's Representative in order to terminate the existing contract for a cause other than those listed under **GCC** Clause 18.3, the Procuring Entity's Representative shall decide whether the breach is fundamental or not.
- 18.6 If this Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible.

# **19. Procedures for Termination of Contracts**

- 19.1 The following provisions shall govern the procedures for the termination of this Contract:
  - a) Upon receipt of a written report of acts or causes which may constitute ground(s) for termination as aforementioned, or upon its own initiative, the Procuring Entity shall, within a period of seven (7) calendar days, verify the existence of such ground(s) and cause the execution of a Verified Report, with all relevant evidence attached;

- b) Upon recommendation by the Procuring Entity, the HoPE shall terminate this Contract only by a written notice to the Contractor conveying the termination of this Contract. The notice shall state:
  - i. that this Contract is being terminated for any of the ground(s) afore-mentioned, and a statement of the acts that constitute the ground(s) constituting the same;
  - ii. the extent of termination, whether in whole or in part;
  - iii. an instruction to the Contractor to show cause as to why this Contract should not be terminated; and
  - iv. special instructions of the Procuring Entity, if any.

The Notice to Terminate shall be accompanied by a copy of the Verified Report;

- c) Within a period of seven (7) calendar days from receipt of the Notice of Termination, the Contractor shall submit to the BCDA a verified position paper stating why the contract should not be terminated. If the Contractor fails to show cause after the lapse of the seven (7) day period, either by inaction or by default, the BCDA shall issue an order terminating the contract;
- d) The Procuring Entity may, at any time before receipt of the Contractor's verified position paper described in item (c) abovewithdraw the Notice to Terminate if it is determined that certain items or works subject of the notice had been completed, delivered, or performed before the Contractor's receipt of the notice;
- e) Within a non-extendible period of ten (10) calendar days from receipt of the verified position paper, the BCDA shall decide whether or not to terminate this Contract. It shall serve a written notice to the Contractor of its decision and, unless otherwise provided in the said notice, this Contract is deemed terminated from receipt of the Contractor of the notice of decision. The termination shall only be based on the ground(s) stated in the Notice to Terminate; and
- f) The HoPE may create a Contract Termination Review Committee (CTRC) to assist him in the discharge of this function. All decisions recommended by the CTRC shall be subject to the approval of the HoPE.
- 19.2 Pursuant to Section 69(f) of RA 9184 and without prejudice to the imposition of additional administrative sanctions as the internal rules of the agency may provide and/or further criminal prosecution as provided by applicable laws, the procuring entity shall impose on contractors after the termination of the contract the penalty of suspension for one (1) year for the first offense, suspension for two (2) years for the second offense from participating in the public bidding process, for violations committed during the contract implementation stage, which include but not limited to the following:

- a) Failure of the contractor, due solely to his fault or negligence, to mobilize and start work or performance within the specified period in the Notice to Proceed ("NTP");
- b) Failure by the contractor to fully and faithfully comply with its contractual obligations without valid cause, or failure by the contractor to comply with any written lawful instruction of the procuring entity or its representative(s) pursuant to the implementation of the contract. For the procurement of infrastructure projects or consultancy contracts, lawful instructions include but are not limited *to* the following:
  - i. Employment of competent technical personnel, competent engineers and/or work supervisors;
  - ii. Provision of warning signs and barricades in accordance with approved plans and specifications and contract provisions;
  - Stockpiling in proper places of all materials and removal from the project site of waste and excess materials, including broken pavement and excavated debris in accordance with approved plans and specifications and contract provisions;
  - iv. Deployment of committed equipment, facilities, support staff and manpower; and
  - v. Renewal of the effectivity dates of the performance security after its expiration during the course of contract implementation.
- c) Assignment and subcontracting of the contract or any part thereof or substitution of key personnel named in the proposal without prior written approval by the procuring entity.
- d) Poor performance by the contractor or unsatisfactory quality and/or progress of work arising from his fault or negligence as reflected in the Constructor's Performance Evaluation System ("CPES") rating sheet. In the absence of the CPES rating sheet, the existing performance monitoring system of the procuring entity shall be applied. Any of the following acts by the Contractor shall be construed as poor performance:
  - i. Negative slippage of 15% and above within the critical path of the project due entirely to the fault or negligence of the contractor; and
  - ii. Quality of materials and workmanship not complying with the approved specifications arising from the contractor's fault or negligence.
  - e) Willful or deliberate abandonment or non-performance of the project or contract by the contractor resulting to substantial breach thereof without lawful and/or just cause.

In addition to the penalty of suspension, the performance security posted by the

contractor shall also be forfeited.

# 20. Force Majeure, Release From Performance

- 20.1 For purposes of this Contract the terms "force majeure" and "fortuitous event" may be used interchangeably. In this regard, a fortuitous event or force majeure shall be interpreted to mean an event which the Contractor could not have foreseen, or which though foreseen, was inevitable. It shall not include ordinary unfavorable weather conditions; and any other cause the effects of which could have been avoided with the exercise of reasonable diligence by the Contractor.
- 20.2 If this Contract is discontinued by an outbreak of war or by any other event entirely outside the control of either the Procuring Entity or the Contractor, the Procuring Entity's Representative shall certify that this Contract has been discontinued. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all works carried out before receiving it and for any Work carried out afterwards to which a commitment was made.
- 20.3 If the event continues for a period of eighty four (84) days, either party may then give notice of termination, which shall take effect twenty eight (28) days after the giving of the notice.
- 20.4 After termination, the Contractor shall be entitled to payment of the unpaid balance of the value of the Works executed and of the materials and Plant reasonably delivered to the Site, adjusted by the following:
  - a) any sum to which the Contractor is entitled under GCC Clause 28;
  - b) the cost of his suspension and demobilization;
  - c) any sum to which the Procuring Entity is entitled.
- 20.5 The net balance due shall be paid or repaid within a reasonable time period from the time of the notice of termination.

# 21. Resolution of Disputes

- 21.1 If any dispute or difference of any kind whatsoever shall arise between the parties in connection with the implementation of the contract covered by the Act and this IRR, the parties shall make every effort to resolve amicably such dispute or difference by mutual consultation.
- 21.2 If the Contractor believes that a decision taken by the Procuring Entity's Representative was either outside the authority given to the Procuring Entity's Representative by this Contract or that the decision was wrongly taken, the decision shall be referred to the Arbiter indicated in the <u>SCC</u> within fourteen (14) days of the notification of the Procuring Entity's Representative's decision.
- 21.3 Any and all disputes arising from the implementation of this Contract covered by the R.A. 9184 and its IRR shall be submitted to arbitration in the Philippines according to the provisions of Republic Act No. 876, otherwise known as the "Arbitration Law" and

Republic Act 9285, otherwise known as the "Alternative Dispute Resolution Act of 2004": *Provided, however*, That, disputes that are within the competence of the Construction Industry Arbitration Commission to resolve shall be referred thereto. The process of arbitration shall be incorporated as a provision in this Contract that will be executed pursuant to the provisions of the Act and its IRR: *Provided, further*, That, by mutual agreement, the parties may agree in writing to resort to other alternative modes of dispute resolution.

# 22. Suspension of Loan, Credit, Grant, or Appropriation

In the event that the Funding Source suspends the Loan, Credit, Grant, or Appropriation to the Procuring Entity, from which part of the payments to the Contractor are being made:

- a) The Procuring Entity is obligated to notify the Contractor of such suspension within seven (7) days of having received the suspension notice.
- b) If the Contractor has not received sums due it for work already done within forty five (45) days from the time the Contractor's claim for payment has been certified by the Procuring Entity's Representative, the Contractor may immediately issue a suspension of work notice in accordance with GCC Clause 45.2.

# 23. BCDA's Representative's Decisions

- 23.1 Except where otherwise specifically stated, the Procuring Entity's Representative will decide contractual matters between the Procuring Entity and the Contractor in the role representing the Procuring Entity.
- 23.2 The Procuring Entity's Representative may delegate any of his duties and responsibilities to other people, except to the Arbiter, after notifying the Contractor, and may cancel any delegation after notifying the Contractor.

# 24. Approval of Drawings and Temporary Works by the Procuring Entity's Representative

- 24.1 All Drawings prepared by the Contractor for the execution of the Temporary Works, are subject to prior approval by the Procuring Entity's Representative before its use.
- 24.2 The Contractor shall be responsible for design of Temporary Works.
- 24.3 The Procuring Entity's Representative's approval shall not alter the Contractor's responsibility for design of the Temporary Works.
- 24.4 The Contractor shall obtain approval of third parties to the design of the Temporary Works, when required by the Procuring Entity.

#### 25. Acceleration and Delays Ordered by the Procuring Entity's Representative

25.1 When the Procuring Entity wants the Contractor to finish before the Intended Completion Date, the Procuring Entity's Representative will obtain priced proposals for achieving the necessary acceleration from the Contractor. If the Procuring

Entity accepts these proposals, the Intended Completion Date will be adjusted accordingly and confirmed by both the Procuring Entity and the Contractor.

25.2 If the Contractor's Financial Proposals for an acceleration are accepted by the Procuring Entity, they are incorporated in the Contract Price and treated as a Variation.

## 26. Extension of the Intended Completion Date

- 26.1 The Procuring Entity's Representative shall extend the Intended Completion Date if a Variation is issued which makes it impossible for the Intended Completion Date to be achieved by the Contractor without taking steps to accelerate the remaining work, which would cause the Contractor to incur additional costs. No payment shall be made for any event which may warrant the extension of the Intended Completion Date.
- 26.2 The Procuring Entity's Representative shall decide whether and by how much to extend the Intended Completion Date within twenty one (21) days of the Contractor asking the Procuring Entity's Representative for a decision thereto after fully submitting all supporting information. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.

# 27. Right to Vary

- 27.1 The Procuring Entity's Representative with the prior approval of the Procuring Entity may instruct Variations, up to a maximum cumulative amount of ten percent (10%) of the original contract cost.
- 27.2 Variations shall be valued as follows:
  - a) At a lump sum price agreed between the parties;
  - b) where appropriate, at rates in this Contract;
  - c) in the absence of appropriate rates, the rates in this Contract shall be used as the basis for valuation; or failing which
  - d) at appropriate new rates, equal to or lower than current industry rates and to be agreed upon by both parties and approved by the HoPE.

#### 28. Contractors Right to Claim

If the Contractor incurs cost as a result of any of the events under **GCC** Clause 13, the Contractor shall be entitled to the amount of such cost. If as a result of any of the said events, it is necessary to change the Works, this shall be dealt with as a Variation.

#### 29. Dayworks

- 29.1 Subject to **GCC** Clause 43 on Variation Order, and if applicable as indicated in the <u>SCC</u>, the Dayworks rates in the Contractor's bid shall be used for small additional amounts of work only when the Procuring Entity's Representative has given written instructions in advance for additional work to be paid for in that way.
- 29.2 All work to be paid for as Dayworks shall be recorded by the Contractor on forms approved by the Procuring Entity's Representative. Each completed form shall be verified and signed by the Procuring Entity's Representative within two days of the work being done.
- 29.3 The Contractor shall be paid for Dayworks subject to obtaining signed Dayworks forms.

# 30. Early Warning

- 30.1 The Contractor shall warn the Procuring Entity's Representative at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the work, increase the Contract Price, or delay the execution of the Works. The Procuring Entity's Representative may require the Contractor to provide an estimate of the expected effect of the future event or circumstance on the Contract Price and Completion Date. The estimate shall be provided by the Contractor as soon as reasonably possible.
- 30.2 The Contractor shall cooperate with the Procuring Entity's Representative in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the Procuring Entity's Representative.

# 31. Programof Work

- 31.1 Within the time stated in the <u>SCC</u>, the Contractor shall submit to the Procuring Entity's Representative for approval a Program of Work showing the general methods, arrangements, order, and timing for all the activities in the Works.
- 31.2 An update of the Program of Work shall show the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work, including any changes to the sequence of the activities.
- 31.3 The Contractor shall submit to the Procuring Entity's Representative for approval an updated Program of Work at intervals no longer than the period stated in the <u>SCC</u>. If the Contractor does not submit an updated Program of Work within this period, the Procuring Entity's Representative may withhold the amount stated in the <u>SCC</u> from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Program of Work has been submitted.
- 31.4 The Procuring Entity's Representative's approval of the Program of Work shall not alter the Contractor's obligations. The Contractor may revise the Program of Work and submit it to the Procuring Entity's Representative again at any time. A revised Program of Work shall show the effect of any approved Variations.

- 31.5 When the Program of Work is updated, the Contractor shall provide the Procuring Entity's Representative with an updated cash flow forecast. The cash flow forecast shall include different currencies, as defined in the Contract, converted as necessary using the Contract exchange rates.
- 31.6 All Variations shall be included in updated Program of Work produced by the Contractor.

# 32. Management Conferences

- 32.1 Either the Procuring Entity's Representative or the Contractor may require the other to attend a Management Conference. The Management Conference shall review the plans for remaining work and deal with matters raised in accordance with the early warning procedure.
- 32.2 The Procuring Entity's Representative shall record the business of Management Conferences and provide copies of the record to those attending the Conference and to the Procuring Entity. The responsibility of the parties for actions to be taken shall be decided by the Procuring Entity's Representative either at the Management Conference or after the Management Conference and stated in writing to all who attended the Conference.

## 33. Bill of Quantities

- 33.1 The Bill of Quantities shall contain items of work for the construction, installation, testing, and commissioning of work to be done by the Contractor.
- 33.2 The Bill of Quantities is used to calculate the Contract Price. The Contractor is paid for the quantity of the work done at the rate in the Bill of Quantities for each item.
- 33.3 If the final quantity of any work done differs from the quantity in the Bill of Quantities for the particular item and is not more than twenty five percent (25%) of the original quantity, provided the aggregate changes for all items do not exceed ten percent (10%) of the Contract price, the Procuring Entity's Representative shall make the necessary adjustments to allow for the changes subject to applicable laws, rules, and regulations.
- 33.4 If requested by the Procuring Entity's Representative, the Contractor shall provide the Procuring Entity's Representative with a detailed cost breakdown of any rate in the Bill of Quantities.

# 34. Instructions, Inspections and Audits

- 34.1 The Procuring Entity's personnel shall at all reasonable times during construction of the Work be entitled to examine, inspect, measure and test the materials and workmanship, and to check the progress of the construction.
- 34.2 If the Procuring Entity's Representative instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no defect, the test shall be a Compensation Event.

34.3 The Contractor shall permit the Funding Source named in the **SCC** to inspect the Contractor's accounts and records relating to the performance of the Contractor and to have them audited by auditors appointed by the Funding Source, if so required by the Funding Source.

# 35. Identifying Defects

The Procuring Entity's Representative shall check the Contractor's work and notify the Contractor of any defects that are found. Such checking shall not affect the Contractor's responsibilities. The Procuring Entity's Representative may instruct the Contractor to search uncover defects and test any work that the Procuring Entity's Representative considers below standards and defective.

## 36. Cost of Repairs

Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Liability Periods shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions.

# **37. Correction of Defects**

- 37.1 The Procuring Entity's Representative shall give notice to the Contractor of any defects before the end of the Defects Liability Period, which is One (1) year from project completion up to final acceptance by the Procuring Entity's Representative.
- 37.2 Every time notice of a defect is given, the Contractor shall correct the notified defect within the length of time specified in the Procuring Entity's Representative's notice.
- 37.3 The Contractor shall correct the defects which he notices himself before the end of the Defects Liability Period.
  - 37.4 The Procuring Entity shall certify that all defects have been corrected. If the Procuring Entity considers that correction of a defect is not essential, he can request the Contractor to submit a quotation for the corresponding reduction in the Contract Price. If the Procuring Entity accepts the quotation, the corresponding change in the SCC is a Variation.

# 38. Uncorrected Defects

- 38.1 The Procuring Entity shall give the Contractor at least fourteen (14) days notice of his intention to use a third party to correct a Defect. If the Contractor does not correct the Defect himself within the period, the Procuring Entity may have the Defect corrected by the third party. The cost of the correction will be deducted from the Contract Price.
- 38.2 The use of a third party to correct defects that are uncorrected by the Contractor will in no way relieve the Contractor of its liabilities and warranties under the Contract.

# 39. Advance Payment

- 39.1 The Procuring Entity shall, upon a written request of the contractor which shall be submitted as a contract document, make an advance payment to the contractor in an amount not exceeding fifteen percent (15%) of the total contract price, to be made in lump sum or, at the most two, installments according to a schedule specified in the <u>SCC</u>.
- 39.2 The advance payment shall be made only upon the submission to and acceptance by the Procuring Entity of an irrevocable standby letter of credit of equivalent value from a commercial bank, a bank guarantee or a surety bond callable upon demand, issued by a surety or insurance company duly licensed by the Insurance Commission and confirmed by the Procuring Entity.
- 39.3 The advance payment shall be repaid by the Contractor by an amount equal to the percentage of the total contract price used for the advance payment.
- 39.4 The contractor may reduce his standby letter of credit or guarantee instrument by the amounts refunded by the Monthly Certificates in the advance payment.
- 39.5 The Procuring Entity will provide an Advance Payment on the Contract Price as stipulated in the Conditions of Contract, subject to the maximum amount stated in <u>SCC</u> Clause 39.1.

# 40. Progress Payments

- 40.1 The Contractor may submit a request for payment for Work accomplished. Such request for payment shall be verified and certified by the Procuring Entity's Representative/Project Engineer. Except as otherwise stipulated in the <u>SCC</u>, materials and equipment delivered on the site but not completely put in place shall not be included for payment.
- 40.2 The Procuring Entity shall deduct the following from the certified gross amounts to be paid to the contractor as progress payment:
  - a) Cumulative value of the work previously certified and paid for.
  - b) Portion of the advance payment to be recouped for the month.
  - c) Retention money in accordance with the condition of contract.
  - d) Amount to cover third party liabilities.
  - e) Amount to cover uncorrected discovered defects in the works.
- 40.3 Payments shall be adjusted by deducting therefrom the amounts for advance payments and retention. The Procuring Entity shall pay the Contractor the amounts certified by the Procuring Entity's Representative within twenty eight (28) days from the date each certificate was issued. No payment of interest for delayed payments and adjustments shall be made by the Procuring Entity.
- 40.4 The first progress payment may be paid by the Procuring Entity to the Contractor provided that at least twenty percent (20%) of the work has been accomplished as

certified by the Procuring Entity's Representative, unless otherwise provided in the SCC.

40.5 Items of the Works for which a price of "0" (zero) has been entered will not be paid for by the Procuring Entity and shall be deemed covered by other rates and prices in the Contract.

## 41. Payment Certificates

- 41.1 The Contractor shall submit to the Procuring Entity's Representative monthly statements of the estimated value of the work executed less the cumulative amount certified previously, except when a different payment scheme is adopted under GCC Clause 40.4, in which case, the statement may only be submitted in accordance with the schedule prescribed by the Procuring Entity.
- 41.2 The Procuring Entity's Representative shall check the Contractor's statement and certify the amount to be paid to the Contractor.
- 41.3 The value of Work executed shall:
  - a) be determined by the Procuring Entity's Representative;
  - b) comprise the value of the quantities of the items in the Bill of Quantities completed; and
  - c) include the valuations of approved variations.
- 41.4 The Procuring Entity's Representative may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.

# 42. Retention

- **42.1** The Procuring Entity shall retain from each payment due to the Contractor an amount equal to a percentage thereof using the rate as specified in GCC Sub-Clause 42.2.
- 42.2 Progress payments are subject to retention of ten percent (10%), referred to as the "retention money." Such retention shall be based on the total amount due to the Contractor prior to any deduction and shall be retained from every progress payment until fifty percent (50%) of the value of Works, as determined by the Procuring Entity, are completed. If, after fifty percent (50%) completion, the Work is satisfactorily done and on schedule, no additional retention shall be made; otherwise, the ten percent (10%) retention shall again be imposed using the rate specified therefor.
- 42.3 The total "retention money" shall be due for release upon final acceptance of the Works. The Contractor may, however, request the substitution of the retention money for each progress billing with irrevocable standby letters of credit from a commercial bank, bank guarantees or surety bonds callable on demand, of amounts equivalent to the retention money substituted for and acceptable to the Procuring Entity, provided that the project is on schedule and is satisfactorily undertaken. Otherwise, the ten (10%) percent retention shall be made. Said irrevocable standby letters of credit,

bank guarantees and/or surety bonds, to be posted in favor of the Government shall be valid for a duration to be determined by the concerned implementing office/agency or Procuring Entity and will answer for the purpose for which the ten (10%) percent retention is intended, *i.e.*, to cover uncorrected discovered defects and third partyliabilities.

42.4 On completion of the whole Works, the Contractor may substitute retention money with an "on demand" Bank guarantee in a form acceptable to the Procuring Entity.

# 43. Variation Orders

- 43.1 Variation Orders may be issued by the Procuring Entity to cover any increase/decrease in quantities, including the introduction of new work items that are not included in the original contract or reclassification of work items that are either due to change of plans, design or alignment to suit actual field conditions resulting in disparity between the preconstruction plans used for purposes of bidding and the "as staked plans" or construction drawings prepared after a joint survey by the Contractor and the Procuring Entity after award of the contract, provided that the cumulative amount of the Variation Order does not exceed ten percent (10%) of the original project cost. The addition/deletion of Works should be within the general scope of the project as bid and awarded. The scope of works shall not be reduced so as to accommodate a positive Variation Order. A Variation Order may either be in the form of a Change Order or Extra Work Order.
- 43.2 A Change Order may be issued by the Procuring Entity to cover any increase/decrease in quantities of original Work items in the contract.
- 43.3 An Extra Work Order may be issued by the implementing official to cover the introduction of new work necessary for the completion, improvement or protection of the project which were not included as items of Work in the original contract, such as, where there are subsurface or latent physical conditions at the site differing materially from those indicated in the contract, or where there are duly unknown physical conditions at the site of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in the Work or character provided for in the contract.
- 43.4 Any cumulative Variation Order beyond ten percent (10%) shall be subject of another contract to be bid out if the works are separable from the original contract. In exceptional cases where it is urgently necessary to complete the original scope of work, the HoPE may authorize a positive Variation Order go beyond ten percent (10%) but not more than twenty percent (20%) of the original contract price, subject to the guidelines to be determined by the GPPB: *Provided, however,* That appropriate sanctions shall be imposed on the designer, consultant or official responsible for the original detailed engineering design which failed to consider the Variation Order beyond ten percent (10%).
- 43.5 In claiming for any Variation Order, the Contractor shall, within seven (7) calendar days after such work has been commenced or after the circumstances leading to such condition(s) leading to the extra cost, and within twenty-eight (28) calendar days deliver a written communication giving full and detailed particulars of any extra cost in

order that it may be investigated at that time. Failure to provide either of such notices in the time stipulated shall constitute a waiver by the contractor for any claim. The preparation and submission of Variation Orders are as follows:

- a) If the Procuring Entity's representative/Project Engineer believes that a Change Order or Extra Work Order should be issued, he shall prepare the proposed Order accompanied with the notices submitted by the Contractor, the plans therefore, his computations as to the quantities of the additional works involved per item indicating the specific stations where such works are needed, the date of his inspections and investigations thereon, and the log book thereof, and a detailed estimate of the unit cost of such items of work, together with his justifications for the need of such Change Order or Extra Work Order, and shall submit the same to the HoPE for approval.
- b) The HoPE or his duly authorized representative, upon receipt of the proposed Change Order or Extra Work Order shall immediately instruct the appropriate technical staff or office of the Procuring Entity to conduct an on-the-spot investigation to verify the need for the Work to be prosecuted and to review the proposed plan, and prices of the work involved.
- c) The technical staff or appropriate office of the Procuring Entity shall submit a report of their findings and recommendations, together with the supporting documents, to the Head of Procuring Entity or his duly authorized representative for consideration.
- d) The HoPE or his duly authorized representative, acting upon the recommendation of the technical staff or appropriate office, shall approve the Change Order or Extra Work Order after being satisfied that the same is justified, necessary, and in order.
- e) The timeframe for the processing of Variation Orders from the preparation up to the approval by the Head of BCDA concerned shall not exceed thirty (30) calendar days.

# 44. Contract Completion

Once the project reaches an accomplishment of ninety five (95%) of the total contract amount, the Procuring Entity may create an inspectorate team to make preliminary inspection and submit a punch-list to the Contractor in preparation for the final turnover of the project. Said punch-list will contain, among others, the remaining Works, Work deficiencies for necessary corrections, and the specific duration/time to fully complete the project considering the approved remaining contract time. This, however, shall not preclude the claim of the Procuring Entity for liquidated damages.

# 45. Suspension of Work

- 45.1 The Procuring Entity shall have the authority to suspend the work wholly or partly by written order for such period as may be deemed necessary, due to *force majeure* or any fortuitous events or for failure on the part of the Contractor to correct bad conditions which are unsafe for workers or for the general public, to carry out valid orders given by the Procuring Entity or to perform any provisions of the contract, or due to adjustment of plans to suit field conditions as found necessary during construction. The Contractor shall immediately comply with such order to suspend the work wholly or partly.
- 45.2 The Contractor or its duly authorized representative shall have the right to suspend work operation on any or all projects/activities along the critical path of activities after fifteen (15) calendar days from date of receipt of written notice from the Contractor to the district engineer/regional director/consultant or equivalent official, as the case may be, due to the following:
  - a) There exist right-of-way problems which prohibit the Contractor from performing work in accordance with the approved construction schedule.
  - b) Requisite construction plans which must be owner-furnished are not issued to the contractor precluding any work called for by such plans.
  - c) Peace and order conditions make it extremely dangerous, if not possible, to work. However, this condition must be certified in writing by the Philippine National Police (PNP) station which has responsibility over the affected area and confirmed by the Department of Interior and Local Government (DILG) Regional Director.
  - d) There is failure on the part of the Procuring Entity to deliver governmentfurnished materials and equipment as stipulated in the contract.
  - e) Delay in the payment of Contractor's claim for progress billing beyond forty-five (45) calendar days from the time the Contractor's claim has been certified to by the procuring entity's authorized representative that the documents are complete unless there are justifiable reasons thereof which shall be communicated in writing to the Contractor.
- 45.3 In case of total suspension, or suspension of activities along the critical path, which is not due to any fault of the Contractor, the elapsed time between the effectivity of the order suspending operation and the order to resume work shall be allowed the Contractor by adjusting the contract time accordingly.

# 46. Payment on Termination

46.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Procuring Entity's Representative shall issue a certificate for the value of the work done and Materials ordered less advance payments received up to the date of the issue of the certificate and less the percentage to apply to the value of the work not completed, as indicated in the SCC. Additional Liquidated Damages shall not apply. If the total amount due to the Procuring Entity exceeds any payment due to the Contractor, the difference shall be a debt payable to the Procuring Entity.

- 46.2 If the Contract is terminated for the Procuring Entity's convenience or because of a fundamental breach of Contract by the Procuring Entity, the Procuring Entity's Representative shall issue a certificate for the value of the work done, Materials ordered, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works, and less advance payments received up to the date of the certificate.
- 46.3 The net balance due shall be paid or repaid within twenty eight (28) days from the notice of termination.
- 46.4 If the Contractor has terminated the Contract under **GCC** Clauses 17 or 18, the Procuring Entity shall promptly return the Performance Security to the Contractor.

# 47. Extension of Contract Time

- 47.1 Should the amount of additional work of any kind or other special circumstances of any kind whatsoever occur such as to fairly entitle the contractor to an extension of contract time, the Procuring Entity shall determine the amount of such extension; provided that the Procuring Entity is not bound to take into account any claim for an extension of time unless the Contractor has, prior to the expiration of the contract time and within thirty (30) calendar days after such work has been commenced or after the circumstances leading to such claim have arisen, delivered to the Procuring Entity notices in order that it could have investigated them at that time. Failure to provide such notice shall constitute a waiver by the Contractor of any claim. Upon receipt of full and detailed particulars, the Procuring Entity shall examine the facts and extent of the delay and shall extend the contract time completing the contract work when, in the Procuring Entity's opinion, the findings of facts justify an extension.
- 47.2 No extension of contract time shall be granted the Contractor due to (a) ordinary unfavorable weather conditions and (b) inexcusable failure or negligence of Contractor to provide the required equipment, supplies or materials.
- 47.3 Extension of contract time may be granted only when the affected activities fall within the critical path of the PERT/CPM network.
- 47.4 No extension of contract time shall be granted when the reason given to support the request for extension was already considered in the determination of the original contract time during the conduct of detailed engineering and in the preparation of the contract documents as agreed upon by the parties before contract perfection.
- 47.5 Extension of contract time shall be granted for rainy/unworkable days considered unfavorable for the prosecution of the works at the site, based on the actual conditions obtained at the site, in excess of the number of rainy/unworkable days pre-determined by the Procuring Entity in relation to the original contract time during the conduct of detailed engineering and in the preparation of the contract documents as agreed upon by the parties before contract perfection, and/or for equivalent period of delay due to major calamities such as exceptionally destructive typhoons, floods and earthquakes, and epidemics, and for causes such as non-delivery on time of materials, working drawings, or written information to be furnished by the Procuring Entity, non-

acquisition of permit to enter private properties or non-execution of deed of sale or donation within the right-of-way resulting in complete paralyzation of construction activities, and other meritorious causes as determined by the Procuring Entity's Representative and approved by the HoPE. Shortage of construction materials, general labor strikes, and peace and order problems that disrupt construction operations through no fault of the Contractor may be considered as additional grounds for extension of contract time provided they are publicly felt and certified by appropriate government agencies such as DTI, DOLE, DILG, and DND, among others. The written consent of bondsmen must be attached to any request of the Contractor for extension of contract time and submitted to the Procuring Entity for consideration and the validity of the Performance Security shall be correspondingly extended.

## 48. Price Adjustment

Except for extraordinary circumstances as determined by NEDA and approved by the GPPB, no price escalation shall be allowed. Nevertheless, in cases where the cost of the awarded contract is affected by any applicable new laws, ordinances, regulations, or other acts of the GoP, promulgated after the date of bid opening, a contract price adjustment shall be made or appropriate relief shall be applied on a no loss-no gain basis.

## 49. Completion

The Contractor shall request the Procuring Entity's Representative to issue a certificate of Completion of the Works, and the Procuring Entity's Representative will do so upon deciding that the work is completed.

# 50. Taking Over

The Procuring Entity shall take over the Site and the Works within seven (7) days from the date the Procuring Entity's Representative issues a certificate of Completion.

# 51. Operating and Maintenance Manuals

- 51.1 If "as built" Drawings and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates stated in the **<u>SCC</u>**.
- 51.2 If the Contractor does not supply the Drawings and/or manuals by the dates stated in the <u>SCC</u>, or they do not receive the Procuring Entity's Representative's approval, the Procuring Entity's Representative shall withhold the amount stated in the <u>SCC</u> from payments due to the Contractor.
# **SECTION V**

# Special Conditions of the Contract

# **Special Conditions of Contract**

GCC Clause	
1.17	The Intended Completion Date is on the 720 <sup>th</sup> day upon receipt of NTP.
1.22	The Procuring Entity is the Bases Conversion and Development Authority.
1.23	The Procuring Entity's Representative is:
	1. Procuring Entity's assigned Project Manager.
1.24	The Site is located at New Clark City, Tarlac.
1.28	The <b>Start Date</b> is projected to be upon receipt by the Contractor of Notice to Proceed.
1.31	The <b>Works</b> shall consist of Construction of 8.82 km road with 4 lane carriageways, drainage system, bicycle lane, pedestrian lane, roadway lightings, street landscape and road safety appurtenances.
2.2	There shall be no sectional completion of the Project.
5.1	The <b>Procuring Entity</b> shall give possession of all parts of the Site to the Contractor upon receipt of the Notice to Proceed.
6.5	The Contractor shall employ at least the following Key Personnel:
	<ol> <li>Project Manager (1)</li> <li>Project Engineer (1)</li> <li>Bridge/Structural Engineer (1)</li> <li>Quantity Engineer (2)</li> <li>Materials Engineer (Materials Engineer II as per DPWH Standard) (1)</li> <li>Site Engineer (6)</li> <li>Electrical Engineer (1)</li> <li>Construction Health and Safety Officer (1)</li> <li>Drainage Engineer (1)</li> <li>Geodetic Engineer (1)</li> </ol>
7.4(c)	No further instructions.
7.7	No further instructions.
8.1	No further instructions.
10	None
12.3	No further instructions.

#### Construction of New Clark City Connecting Road to Industrial Park Special Conditions of the Contract

12.5	Fifteen (15) years.
13	No additional provision.
18.3(h)(i)	No further instructions.
21.2	The Arbiter is:
	Construction Industry Arbitration Commission
	2/F & 5/F, Executive Center Bldg. 369 Gil Puyat Ave., cor. Makati Ave., Makati City Tel. Nos.: (+632) 895.4424 / 895.6826 Fax No.: (+632) 897.9336 E-mail: ciap@dti.gov.ph
29.1	Dayworks are applicable at the rate shown in the Contractor's original Bid.
31.1	The Contractor shall submit the Program of Work to the Procuring Entity's Representative within ten (10) calendar days from receipt of Notice of Award.
31.3	The Program of Work shall be updated and shall be submitted to Procuring Entity's assigned Project Manager for approval:
	<ol> <li>on the first working day of the week following a Weekly Accomplishment Report indicating the slippage; and</li> <li>together with the request for Variation Orders, either in the form of a change order or extra work order, that shall cover any increase or decrease in the original quantities of the Contract.</li> </ol>
	Failure to submit the Program of Work, the amount of at least equal to one-tenth (1/10) of one percent (1%) of the contract amount shall be withheld from the contractor.
34.3	The Funding Source is the Government of the Philippines through the GAA.
39.1	The amount of the advance payment shall be ten percent (10%) of the contract price.
40.1	No further instructions.
40.4	No further instructions.
51.1	The As-Built Drawings shall be required before the issuance of a Certificate of Completion.
51.2	The final payment shall be withheld for failing to submit the complete set of As- Built Drawings.

# **SECTION VI**

**Technical Specifications** 

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# 1 INTRODUCTION

The Specifications describe in detail the work to be executed, character and quality of materials and workmanship, construction requirements, methods of measurement, basis of payment and specific responsibilities of the Contractor that are not covered by the Conditions of Contract.

Whenever the word "Particular Specification" is used in the Standard Specifications it shall mean as "Special or Supplemental Specifications" and whenever the word "Standard Specifications" is used it shall mean the DPWH "Standard Specifications for Highways, Bridges and Airports 2013 (Volume II)".

Pertinent notes appearing in the Contract Plans or Drawings shall also be considered as part and parcel of the Specifications.

Any further amendment to the Specifications and to any other Document, if necessary, shall be furnished to the Bidders by means of a Supplemental Notice or Addendum.

# 2 **PROJECT INFORMATION**

The New Clark City Road Network Project Phase I with a total length of 8.82 kilometers is divided in two (2) road sections: Road 1 (6.60 kms) and Road 2 (2.22 kms). Phase I project will be financed by the Government of the Philippines (GOP) through the General Appropriations Act (GAA).

# 2.1 Objective of the Project

The road network system is envisioned to give an efficient transport system to a modern metropolis with mixed residential, commercial, agro-industrial, institutional and information technology development.

#### 2.2 Scope of Works

The Works will comprise of two (2) components as follows:

- Construction works of 8.82 km 4-lane portland cement concrete pavement (300 mm thick) with sand washed finish bike lanes, stamped concrete finish pedestrian lanes, drainage, roadway lighting, street landscape, road signs and markings for twentyfour (24) months, and
- (ii) One (1) year Defects Liability Period (DLP) –Covers the remedying of any defects or damages to the pavement and other permanent structures attributable to the Contractor. This is not paid for separately but shall be at the risk and cost of the

Contractor as warranty of the permanent works. The Contractor shall also perform routine maintenance activities.

# **3 STANDARD SPECIFICATIONS**

The Standard Specifications shall be the DPWH Standard Specifications for Highways, Bridges and Airports 2013 (Volume II) composed of nine (9) Parts categorized according to the character of the works to be performed:

Part A	-	Facilities for the Engineer;
Part B	-	Other General Requirements;
Part C	-	Earthwork;
Part D	-	Sub-base and Base Course;
Part E	-	Surface Course;
Part F	-	Bridge Construction;
Part G	-	Drainage and Slope Protection;
Part H	-	Miscellaneous Structures;
Part J	-	Roadway Lighting
Part K	-	Street Landscape

**Part A - Facilities for the Engineer and Part B - Other General Requirements** describe some general requirements of the Contract such as Facilities for the Engineer and items of temporary works or facilities such as offices, warehouses, workshops, workers' accommodations for the Contractor, required for the proper execution and completion of the Works but do not necessarily become integral parts of the completed project.

**Part C to Part G**provide the specifications for the permanent workswith each part covering the items pertaining to a particular type of work. The specifications for permanent work items are generally presented under five (5) components as follows:

- 1. Description,
- 2. Material Requirements,
- 3. Construction Requirements,
- 4. Method of Measurement, and
- 5. Basis of Payment.

**Part H - Miscellaneous Structures** provides the specifications for "items of permanent works" regarding ancillary structures pertinent to highways and bridges that may not be properly classified as belonging to any of the particular types of work represented by the earlier parts (Part C to Part G).

**Part I – Material Details** deals with additional and more detailed specifications of individual component materials required in the construction of the "items of work" taken up under the earlier eight (8) parts (Part A to Part H).

# 4 SPECIAL SPECIFICATIONS

The Special Specifications consists of modifications and additions to the Standard Specifications to adapt to actual conditions and/or requirements of the project.

Parts J (Roadway Lighting) and K (Street Landscape) are added to the Specifications.

For Special Items or additional works, the item is distinguished by placing the symbol "SPL" before its designated number and added at the particular Part where the special item belongs.

Minimum Testing Requirements for the various items of work is contained in the Appendix.

# **PART A** Facilities for the Engineer

#### PART A - FACILITIES FOR THE ENGINEER

#### A.1 Requirements

#### A.1.1 Field Office, Laboratories and Living Quarter for the Engineer

Modify this Sub-Section A.1.1 to read as follows:

#### 1. Insert the following between the 1st and 2nd paragraphs of Sub-item No. 1:

Building and facilities for the use of the Engineer and his staff shall be situated in a government owned lot to maximize government's use of the facilities beyond project completion.

#### 2. Add the following after the end of Sub-item No. 1: Field Office Building

The Contractor shall construct and maintain until final completion of the project a Field Office Building for the Engineer and his staff having a floor area of not less than 180 m2. The office shall be fully painted, made of concrete plaster finished walls and partitions, G.I. roofing, glass windows and hard wooden doors, plyboard ceilings, tiled floors, tiled toilet and bath with complete sanitary fixture and sewage connections to a septic tank and with complete electrical installation. All windows and door openings of the building shall be wire screened for insect protection.

The office building shall be constructed in accordance with the location, floor plan and drawings prepared by the Contractor and approved by the Engineer. The office shall have parking provision for at least ten (10) vehicles and provided with 24-hour security services. The clearing, grubbing, removing existing structures and leveling of the land for the building yard shall be required.

The office shall be supplied with complete furniture, fixture, appliances, equipment, internet service, electricity and lighting, potable water, drainage and sanitary facilities, consumables and other items. These shall be brand new when initially furnished and shall conform to those indicated and specified under **SCHEDULES A**, **D and E** as to kind, grade, type and size or as determined by the Engineer. The Contractor shall submit to the Engineer for approval the proposed manufacturer, type and models with parts performance catalogues and manufacturer's warranty prior to purchase. All furniture, fixtures, appliances and equipment shall be turned-over to the BCDAupon completion of the project. The Contractor shall complete the field office building and be ready for use within four (4) months after the commencement of the Works.

#### a) Temporary Field Office

The Employer shall provide the temporary field office building for the Engineer's initial use while the permanent field office building is under construction for four (4) month period.

The Contractor shall provide the temporary office with sufficient furniture, fixtures, equipment, appliances, internet service and necessary supplies, with the Engineer's prior approval. All furniture, fixtures, appliances and equipment, consumables and other items, for the use of the Engineer, shall be brand new when initially furnished and shall conform to those indicated and specified in **SCHEDULES A**, **D** and **E**. Transfer of the furniture, fixtures, equipment, appliances, etc. to the permanent office shall be at the Contractor's cost.

Generator set shall be provided for both the temporary and permanent offices. The generator shall be housed in a solid concrete bunker to minimize the noise of operation.

If there will be delay in the provision of the permanent field office building, the Contractor shall maintain such temporary facilities for the Engineer over the same period.

#### b) Living Quarters

The Contractor shall provide, operate and maintain Living Quarters for the Engineer and his staff on rental basis for at least ten (10) personnel and all utilities therein in good condition throughout the whole period, including all necessary electricity and lighting, water, drainage, sanitary facilities, internet and telephone services. The Contractor may provide enough houses if one house cannot accommodate the above staff provided the number of furniture, fixtures, equipment and appliances are appropriate for both houses without additional cost.

The Contractor shall furnish as soon as the Engineer starts his mobilization on site, sufficient furniture, fixtures, equipment, appliances, internet service and necessary supplies for use in the Living Quarters, with the Engineer's prior approval. All furniture, fixtures, appliances and equipment, consumables and other items shall be brand new when initially furnished and shall conform to those indicated and specified under **SCHEDULES B and F** as to kind, grade, type and size or as determined by the Engineer.

All rooms shall be properly insulated and shall be equipped with electric lights, air conditioning and/or mechanical ventilation, hot and cold water supply. Operation and maintenance of the living quarters shall include as minimum: cleaners (2), cook (2), laundrywomen (2) and 24/7 security personnel, all to the satisfaction of the Engineer.

#### c) Laboratory for the Engineer

The Contractor shall be responsible for all the materials quality control and laboratory tests needed in the execution the Works. The Contractor shall submit for the approval by the Engineer the possible accredited materials testing centers where the necessary tests shall be conducted. The Contractor shall also make available at site qualified and experienced laboratory personnel and Materials Engineer to carry out, transport the specimen to the accredited laboratory centers and testify on all the materials quality control tests as specified in the Contract and required by the Engineer. The person so appointed by the Contract to manage the laboratory works and to be present during the actual testing shall be well experienced in the type of work to be undertaken and shall be subject to the approval of the Engineer.

The Contractor shall make available at site concrete curing tank of suitable size to accommodate project requirement as approved by the Engineer and sufficient number of minor testing equipment and apparatus necessary for immediate sampling and tests required for the succeeding works to proceed such as flexural and cylindrical molds, speedy moisture tester, field density test, slump cone, radioisotope type soil density and moisture gauge (RI gauge).

No separate payment shall be made in respect of sampling, transport, handling, testing costs and the time, days and works rendered by the Materials Engineer and laboratory personnel, it shall be deemed included in the rates and prices of the various items of work in the Contract.

### SCHEDULE A

Furniture/Fixtures and Equipment/Appliances for the Field Office for the Engineer

### A.1a Field Office Furniture and Fixtures

	Description	Unit	Quantity
1	Clerical Table, 180 cm x 60 cm x 76 cm. Wood	each	10
2	Clerical Ergonomic Chair, Swivel Type base with arm rest, Textile or leather finish	each	10
3	Stacking chair, padded with backrest or equivalent	each	10
4	Conference Table, wooded top with steel powder coating, dark mahogany color with 12 chairs reclining and tilting back rest swivel base and leather finish.	set	1
5	Bookshelf, 120 cm x 240 cm with 5-shelves, 32 cm deep	each	2
6	Steel Filling cabinet, 4-5 drawers, Fire resistant, with lock and keys.	each	4

#### A.1b Field Office Equipment and Appliances

	Description	Unit	Quantity
1	Office Copier machine, plain paper, capable of accommodating A3 size paper with reduction and enlarging function, with scanner including scan software with SCSI Card or USB Connector (latest model)	unit	1
2	Air Conditioning Unit, floor mounted with inverter complete with standard accessories 3.0 Hp, 220V AC	unit	4
3	LAN Hub Port for 10 Base – T Cable with 4 ports min	unit	1
4	Desktop Computers, Intel Core i7-3220 k-3.3ghz (latest model), USB Ports, 6GB RAM memory, 500 GB SATA 7200 rpm hard disk drive, UPS with AVR (A.P.C.) DVD/CD-RW Combo drive, 18.5-inch flat screen color monitor, mid tower casing with 300-W P.S. dust cover, PS2 keyboard & optical wheel mouse, Windows 10 w/ complete accessories, Fast Internet Lan Card with MS Office 2020 and Antivirus Software.	set	4
5	X230 Core i7-3520M 500GB 13 - inch Laptop Computer, Windows 10 w/ complete accessories with MS Office 2020 and Antivirus Software.	unit	5
6	X230 Core i7-3520M 500GB 15-inch Laptop Computer, Windows 10 w/ complete accessories with MS Office 2020 and Antivirus Software.	unit	1
7	Smart TV 60 inches Full HD with TV Stand	unit	1
8	Visitor's Chair, padded backrest or equivalent	each	4
9	Magnetic Whiteboard, 4' x 5' on roller stand, reversible	each	2
10	Drone Quadcopter UAV with Camera 3-axis DJI Mavic 2 Pro or equivalent	unit	1
11	Electric Stand Fan, 16" diameter blade	unit	2
12	Fire Extinguisher, 10 lbs.	unit	4
13	Wall Clock	unit	1
14	Venetian Blinds for all windows	lot	1
15	Hot and Cold Water Dispenser	each	1
16	Rain coats	set	10
17	Safety Shoes (Steel toe)	pair	10
18	Hard Hat	each	10
19	Inkjet Printer, capable of A3/A4, colored	each	2
20	HDMI Cord/Cable	unit	1

# SCHEDULE B

Furniture/Fixtures and Equipment/Appliances for the Living Quarters for the Engineer

# A.3 – Living Quarters Furniture and Appliances

	Description	Unit	Quantity
a)	LIVING ROOM		
1	Long Sofa set with padded arm and back rest with synthetic leather upholstery or equivalent and Sofa Lounge Chairs with padded arm and backrest synthetic leather upholstery or equivalent	set	2
2	Electric stand fan, 16" diameter blade	unit	4
b)	DINING ROOM AND KITCHEN		
1	Dining table, 12-persons, dark brown, non-gloss varnish with 6mm thick glass top or equivalent & chairs with backrest, dark brown, non-gloss varnish or equivalent	set	1
2	Cupboard, 122cm wide by 32cm deep with 5 shelves and panel doors with locks and keys, painted or equivalent	each	1
3	Gas stove with two (2) burners complete with hose, regulator and LPG tank	each	1
4	Electric flat iron with temperature control and foldable ironing table with pad	each	2
5	40-inch LED Flat TV, Full HD, HDR Support, Adaptive Backlight dimming, Smart TV, Digital TV	each	1
6	Refrigerator, 10 cu. ft.	each	1
7	Rice Cooker, 10 cups	unit	1
8	Electric Airpot at least 4-liter capacity	each	1
9	Hot and cold water dispenser	each	1
10	Exhaust fan, window type	unit	2
11	Fire Extinguisher, 10lbs.	unit	1
12	Set of kitchen ware for at least 12 persons consisting of the following: spoons, forks, knives, cup & saucers, serving plates, place mats, ash trays, rice plates, pitchers, kitchen knives, bolos, casserole, frying pan, chopping board, kettle and canister	set	2
13	Washing Machine, combo washer and dryer, 10kg wash, 6kg dryer	each	1
14	Electric Stand Fan, 16" diameter blade	each	2
C)	BEDROOM AND BATHROOM		
1	Single Bed with Frame, 187 cm long by 90cm wide with 10cm thick foam rubber mattresses or equivalent	each	10
2	Air Conditioning Unit, window type with timer complete with standard accessories 1.00 Hp, 220V AC	unit	10
3	Electric Stand Fan, 16" diameter blade	unit	3
4	Fire Extinguisher, 10 lbs.	each	2

#### SCHEDULE C

# List of Minimum Contractor's Owned Laboratory Testing Equipment and Apparatus (Optional)

# SCHEDULE C-1 MECHANICAL SIEVE ANALYSIS OF SOIL AND ANALYSIS OF FINE AND COARSE AGGREGATE

Sieve Analysis Set, 203 mm dia. 51 mm depth, Brass AASHTO M92

Description	Unit	Qty
1. 3" 8 dia. Brass Sieve	each	1
2. 2 <sup>1</sup> / <sub>2</sub> 8 dia. Brass Sieve	each	1
3. 2" 8 dia. Brass Sieve	each	1
4. 1 <sup>1</sup> / <sub>2</sub> 8 dia. Brass Sieve	each	1
5. 1" 8 dia. Brass Sieve	each	1
6. ¾ 8 dia. Brass Sieve	each	1
7. 1/2 8 dia. Brass Sieve	each	1
8. 3/8 8 dia. Brass Sieve	each	1
9. #4 8 dia. Brass Sieve	each	1
10. #8 8 dia. Brass Sieve	each	1
11. #10 8 dia. Brass Sieve	each	1
12. #12 8 dia. Brass Sieve	each	1
13. #16 8 dia. Brass Sieve	each	1
14. #20 8 dia. Brass Sieve	each	1
15. #30 8 dia. Brass Sieve	each	1
16. #40 8 dia. Brass Sieve	each	1
17. #50 8 dia. Brass Sieve	each	1
18. #100 8 dia. Brass Sieve	each	1
19. #200 8 dia. Brass Wash Sieve	each	1
20. #200 8 dia. Brass Was Sieve, 4" deep for washing	each	1
21. Brass Pan, 8" diameter x 2" deep	each	1
22. Brass Cover with ring	each	1
23. Galvanized Steel Pan, 24" x 24" x 2"	each	6
24. Galvanized Steel Pan, 24" x 24" x 4"	each	6
25. Hand operated shaker for 8" diameter sieve	each	1
26. Mechanical Shaker	each	1
27. Balance, sensitive to 0.50 gm, 20kg capacity	unit	2
with set of weights to accommodate capacity of balance		
28. Triple Beam Balance, 2610 grams / 0.10 gr	unit	1
29. Drying Pans – 12" x 12" x 3"	each	6
30. Sieve Brushes	each	2
31. Paint Brush – 2.5"	each	2

#### SCHEDULE C-2 ATTERBERG LIMIT

Description		Qty
Liquid Limit Set with spatula & grooving tool	set	1
Graduated Cylinder, 100ml	each	1
Plastic Limit Set	set	1
Balance sensitive to 0.001 gm., 1.0 kg capacity with set weights	unit	1
Evaporating Disk	each	2
	Description Liquid Limit Set with spatula & grooving tool Graduated Cylinder, 100ml Plastic Limit Set Balance sensitive to 0.001 gm., 1.0 kg capacity with set weights Evaporating Disk	DescriptionUnitLiquid Limit Set with spatula & grooving toolsetGraduated Cylinder, 100mleachPlastic Limit SetsetBalance sensitive to 0.001 gm., 1.0 kg capacity with set weightsunitEvaporating Diskeach

6.	Aluminum Moisture Can	each	24
SCHED	DULE C-3 SHRINKAGE FACTOR TEST		
	Description	Unit	Qty
1. 2. 3. 4. 5. 6. 7. 8. 9. 10.	Shrinkage Limit Set Disk, for Mercury, 150mm dia. Spatula. Shrinkage Disk, 45 mm dia. Straight Edge, 300mm Glass Container, 50 mm dia. Glass Plate, 2 mm x 80 mm x 80 mm Glass Plate with Prongs Graduated Cylinder, 25 ml . Mercury, 500 cc	set pc pc pc pc pc pc pc btl	1 1 1 1 1 1 1
SCHED	OULE C-4 MOISTURE DENSITY (Compaction Test)		
	Description	Unit	Qty
1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.	Compaction Mold, 4" dia. 1/30 cu. ft. w/ collar & base plate Compaction Rammer, 5.5 lbs. x 12" drop Compaction Mold, 6" dia. 1/13/33 cu. ft. w/ collar & base plate Compaction Rammer, 10 lbs. x 18" drop Steel Straight Edge, 12" x $\frac{1}{2}$ x 1/8" Mixing Trowel, 2.5" x 4.5" blade" Spatula, 8 inches blade Trimming Knife Heavy Duty Solution Balance, 20kg capacity Graduated cylinder 1000ml Moisture cans	each each each each each each each each	1 1 2 2 2 2 2 1 2 2 4
SCHED	DULE C-5 SPECIFIC GRAVITY TEST		
	Description	Unit	Qty
a.	Specific Gravity Test Set of Soil		
1. 2. 3. 4.	Analytical Balance; 200- gram capacity, sensitive 0.001 gm Pycnometer Top and Jar Volumetric Flask, 100 ml Thermometer, range 0-100ºC graduated,1ºC	unit each each each	1 2 1 2
b.	Fine Aggregates Specific Gravity Test Set		
1. 2. 3. 4.	Balance, capacity 1 kg. sensitivity 0.10 gm with set of weights Volumetric Flask, 500 ml Conical Mold, Metal Tamping Rod	set each each each	1 1 1 1

# c. Course Aggregate Specific Gravity Test Set

1.	Balance, capacity 5 kg. sensitivity 0.50 gm with set of weights	unit	1
2.	Basket, mesh opening 3.35 or 2.86 mm dia., height 20 mm	each	1
3.	Steel container for wire basket	each	1
4.	Steel stand with rubber plate covering upper surface	each	1

# SCHEDULE C-6 SAND EQUIVALENT VALUE

Unit	Qty
set	1
each	1
unit	1
	Unit set each each each each each each each unit

# SCHEDULE C-7 CALIFORNIA BEARING RATIO (CBR)

Description	Unit	Qty
Mechanical CBR Loading Apparatus with Strain Gauge	set	1
CBR mold, 6" x 7" with perforated base plate & collar	each	3
Slotted surcharge Weights	each	3
Annular Surcharge Weight	each	3
Straight edge	each	2
Spacer Disk	each	1
Dial Indicator Reading to 0.25 mm for penetration	each	3
Tripod attachment	each	3
	Description Mechanical CBR Loading Apparatus with Strain Gauge CBR mold, 6" x 7" with perforated base plate & collar Slotted surcharge Weights Annular Surcharge Weight Straight edge Spacer Disk Dial Indicator Reading to 0.25 mm for penetration Tripod attachment	DescriptionUnitMechanical CBR Loading Apparatus with Strain Gauge CBR mold, 6" x 7" with perforated base plate & collarsetSlotted surcharge WeightseachAnnular Surcharge WeighteachStraight edgeeachSpacer DiskeachDial Indicator Reading to 0.25 mm for penetrationeachTripod attachmenteach

### SCHEDULE C-8 DENSITY OF SOIL IN-PLACE BY SAND CONE METHOD

	Description	Unit	Qty
1.	Sand Cone and Jug	each	3
2.	Replacement Jug Plastic	each	3
3.	Density Plate	each	3
4.	Sampling Spoon	each	3
5.	Field Cans, 1- Gallon	each	12
6.	Steel Chisel One – Inch width	each	3
7.	Ball Hammer	each	3
8.	Sand Scoop	each	3
9	Speedy Moisture Tester with Reagents	unit	1
10	Heavy Duty Balance, 20 kg. capacity, 1.0 gm sensitivity	each	1
SCHED	JLE C-10 MAKING AND CURING CONCRETE COMPRESSION AND TEST SPECIMEN IN THE FIELD	FLEX	KURAL

Description
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#### Unit Qty

1.	Mold Cylinder for Compression Test Specimen	each	24
2.	Mold Beam for Flexural Test Specimen	each	36
3.	Tamping Rod, 16mm dia., 24" long having each	each	3
	one end hemispherical		

#### SCHEDULE C-12 SLUMP OF PORTLAND CEMENT CONCRETE

	Description	Unit	Qty
1.	Slump Test Apparatus	set	3
	Slump Cone w/ Base & graduated Tamping Rod		
2.	Mixing Pan 24" x 24" x 3"	each	6
3.	Cement Trowel (Rectangular)	each	3
4.	Armored Thermometer	each	6
5.	Yield Bucket, 1/10 cu. Ft	each	3
6.	Yield Bucket, 1/2 cu. Ft	each	3
7.	Vicat Apparatus - Complete set with accessories	set	1

# SCHEDULE C-13 OTHER EQUIPMENT AND APPARATUS

	Description	Unit	Qty
1.	Laboratory Oven, Double Wall Gravity Connection, 220/60cy., 24" x 24" x 34.5"	unit	1
2.	Gas Range, 2 Burners	unit	1
3. 4.	Graduated Cylinder, 100ml	each	1
5.	Stanley Steel Tape, 5m	each	6
6.	Pipe Wrench, 500mm	each	1
7.	Trowel, 150mm blade	each	2
8.	Steel Straight Edge, 300mm long	each	2
9.	Stainless Steel Mixing Bowl, 5lit. capacity	each	2
10.	Plastic Buckets	each	2
11.	Shovel, Long Handled	each	6
12.	Paint Brush, 2.5cm wide	each	6
13.	Rubber Mallet, 15cm diameter	each	6
14.	Scoop, Square Mouth, Cast Aluminum, 76 x 20cm dia.	each	3
15.	Hard Bristle Broom with handle	each	3
16.	Organic impurities Test Set / Standard Color Set	set	1

<u>SCHEDULE D</u> Provision of Field Office Supplies and Consumables Stores

Description	Unit	Quantity
a) Office Supplies (to be provided only on the 1 <sup>st</sup> month)		
Bond Paper, A4 size	ream	8
Copy Paper, A3 size	ream	4
Stapler	each	4
Staple Wire Remover	each	4

#### Construction of New Clark City Connecting Road to Industrial Park **Technical Specifications**

Two (2) Hole Puncher	each	2
Tape Dispenser	each	4
Measuring Tape, 10 meters	each	1
Triangular scale, Metric	each	2
Incoming/Outgoing Table Tray	each	4
Folder, Long	pc.	24
Brown Envelope, Long	pc.	12
Fastener	box	1
Waste Paper Bin	each	8
Pencil Sharpener (table top)	each	2
Steel Ruler, 36 inches	each	1
Scissors	each	2
First Aid Kit	each	2
Stamp Pad w/ Ink	set	1
Field Book	pc.	12
Record Book (100 leaves)	pc.	12
Heavy Duty Cutter	each	2
White Board Eraser	each	2
Broom	each	2
Dust Pan	each	2
Floor Mop (Set Handle w/ Mop head)	each	1
USB 64 GB Capacity	each	4
b) Office Supply (Monthly from the second month)		
Bond Paper. A4 size	ream	8
Bond Paper, A4 size Copy Paper, A3 size	ream	8
Bond Paper, A4 size Copy Paper, A3 size Yellow Pad Paper	ream ream pad	8 4 1
Bond Paper, A4 size Copy Paper, A3 size Yellow Pad Paper Brown Envelope, Long	ream ream pad pc.	8 4 1 12
Bond Paper, A4 size Copy Paper, A3 size Yellow Pad Paper Brown Envelope, Long Expanding Envelope, Long	ream ream pad pc.	8 4 1 12 12
Bond Paper, A4 size Copy Paper, A3 size Yellow Pad Paper Brown Envelope, Long Expanding Envelope, Long Letter Envelope. White	ream ream pad pc. pc.	8 4 1 12 12 12
Bond Paper, A4 size Copy Paper, A3 size Yellow Pad Paper Brown Envelope, Long Expanding Envelope, Long Letter Envelope, White Letter Envelope, Brown	ream ream pad pc. pc. pc. pc.	8 4 1 12 12 12 12 12
Bond Paper, A4 size Copy Paper, A3 size Yellow Pad Paper Brown Envelope, Long Expanding Envelope, Long Letter Envelope, White Letter Envelope, Brown Folder, Long	ream ream pad pc. pc. pc. pc. pc.	8 4 1 12 12 12 12 12 12
Bond Paper, A4 size Copy Paper, A3 size Yellow Pad Paper Brown Envelope, Long Expanding Envelope, Long Letter Envelope, White Letter Envelope, Brown Folder, Long Fastener	ream ream pad pc. pc. pc. pc. pc. pc. pc. pc.	8 4 1 12 12 12 12 12 12 12 12
Bond Paper, A4 size Copy Paper, A3 size Yellow Pad Paper Brown Envelope, Long Expanding Envelope, Long Letter Envelope, White Letter Envelope, Brown Folder, Long Fastener Ink Eraser	ream ream pad pc. pc. pc. pc. pc. pc. pc. box each	8 4 1 12 12 12 12 12 12 12 1 1 1
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Bond Paper, A4 size Copy Paper, A3 size Yellow Pad Paper Brown Envelope, Long Expanding Envelope, Long Letter Envelope, White Letter Envelope, Brown Folder, Long Fastener Ink Eraser Eraser, Staedtler Mini Correction Boller 6m	ream ream pad pc. pc. pc. pc. pc. pc. pc. box each each each	8 4 1 12 12 12 12 12 12 12 1 1 1 2 1
Bond Paper, A4 size         Copy Paper, A3 size         Yellow Pad Paper         Brown Envelope, Long         Expanding Envelope, Long         Letter Envelope, White         Letter Envelope, Brown         Folder, Long         Fastener         Ink Eraser         Eraser, Staedtler         Mini Correction Roller 6m         Magic Tape, 18 mm, 33 mm	ream ream pad pc. pc. pc. pc. pc. pc. box each each each each	8 4 1 12 12 12 12 12 12 12 1 1 2 1 1 2 1 1
Bond Paper, A4 size         Copy Paper, A3 size         Yellow Pad Paper         Brown Envelope, Long         Expanding Envelope, Long         Letter Envelope, White         Letter Envelope, Brown         Folder, Long         Fastener         Ink Eraser         Eraser, Staedtler         Mini Correction Roller 6m         Magic Tape, 18 mm, 33 mm	ream ream pad pc. pc. pc. pc. pc. pc. box each each each each roll	8 4 1 12 12 12 12 12 12 12 1 1 1 2 1 1 1 1
Bond Paper, A4 size         Copy Paper, A3 size         Yellow Pad Paper         Brown Envelope, Long         Expanding Envelope, Long         Letter Envelope, White         Letter Envelope, Brown         Folder, Long         Fastener         Ink Eraser         Eraser, Staedtler         Mini Correction Roller 6m         Magic Tape, 18 mm, 33 mm         Cleth Tapo, 1" 2" 8 3"	ream ream pad pc. pc. pc. pc. pc. pc. box each each each each roll	8 4 1 12 12 12 12 12 12 12 1 1 2 1 1 1 1
Bond Paper, A4 size         Copy Paper, A3 size         Yellow Pad Paper         Brown Envelope, Long         Expanding Envelope, Long         Letter Envelope, White         Letter Envelope, Brown         Folder, Long         Fastener         Ink Eraser         Eraser, Staedtler         Mini Correction Roller 6m         Magic Tape, 18 mm, 33 mm         Cloth Tape, 1", 2" & 3"         Clue stick 20 grame	ream ream pad pc. pc. pc. pc. pc. pc. box each each each each roll roll	8 4 1 12 12 12 12 12 12 12 12 1 1 1 2 1 1 1 1 1 2
Bond Paper, A4 size Copy Paper, A3 size Yellow Pad Paper Brown Envelope, Long Expanding Envelope, Long Letter Envelope, White Letter Envelope, Brown Folder, Long Fastener Ink Eraser Eraser, Staedtler Mini Correction Roller 6m Magic Tape, 18 mm, 33 mm Masking Tape, 18 mm, 33 mm Cloth Tape, 1", 2" & 3" Glue stick, 20 grams Erasei Lead 0.5mm 2B, HB, F	ream ream pad pc. pc. pc. pc. pc. pc. box each each each each roll roll roll	8 4 1 12 12 12 12 12 12 12 1 1 1 2 1 1 1 1
Bond Paper, A4 size         Copy Paper, A3 size         Yellow Pad Paper         Brown Envelope, Long         Expanding Envelope, Long         Letter Envelope, White         Letter Envelope, Brown         Folder, Long         Fastener         Ink Eraser         Eraser, Staedtler         Mini Correction Roller 6m         Magic Tape, 18 mm, 33 mm         Cloth Tape, 1", 2" & 3"         Glue stick, 20 grams         Pencil Lead, 0.5mm 2B, HB, F	ream ream pad pc. pc. pc. pc. pc. pc. box each each each each roll roll roll roll each tube	8         4         1         12         12         12         12         12         12         12         12         12         1         1         1         1         1         2         3
Bond Paper, A4 size         Copy Paper, A3 size         Yellow Pad Paper         Brown Envelope, Long         Expanding Envelope, Long         Letter Envelope, White         Letter Envelope, Brown         Folder, Long         Fastener         Ink Eraser         Eraser, Staedtler         Mini Correction Roller 6m         Magic Tape, 18 mm, 33 mm         Cloth Tape, 1", 2" & 3"         Glue stick, 20 grams         Pencil Lead, 0.5mm 2B, HB, F         Ball pen	ream ream pad pc. pc. pc. pc. pc. pc. box each each each each roll roll roll roll roll tube box	8         4         1         12         12         12         12         12         12         12         1         1         1         1         1         1         2         3         1         4
Bond Paper, A4 size         Copy Paper, A3 size         Yellow Pad Paper         Brown Envelope, Long         Expanding Envelope, Long         Letter Envelope, White         Letter Envelope, Brown         Folder, Long         Fastener         Ink Eraser         Eraser, Staedtler         Mini Correction Roller 6m         Magic Tape, 18 mm, 33 mm         Cloth Tape, 1", 2" & 3"         Glue stick, 20 grams         Pencil Lead, 0.5mm 2B, HB, F         Ball pen         Sign pen	ream ream pad pc. pc. pc. pc. pc. pc. pc. box each each each each roll roll roll roll roll each tube box	8         4         12         12         12         12         12         12         12         12         12         12         1         1         1         1         1         2         3         1         4
Bond Paper, A4 size         Copy Paper, A3 size         Yellow Pad Paper         Brown Envelope, Long         Expanding Envelope, Long         Letter Envelope, White         Letter Envelope, Brown         Folder, Long         Fastener         Ink Eraser         Eraser, Staedtler         Mini Correction Roller 6m         Magic Tape, 18 mm, 33 mm         Masking Tape, 18 mm, 33 mm         Cloth Tape, 1", 2" & 3"         Glue stick, 20 grams         Pencil Lead, 0.5mm 2B, HB, F         Ball pen         Sign pen         Paper Clip, 100pcs per box, 33mm	ream ream pad pc. pc. pc. pc. pc. pc. box each each each each roll roll roll roll each tube box each	8         4         1         12         12         12         12         12         12         12         12         12         1         1         1         1         2         3         1         4         1
Bond Paper, A4 size         Copy Paper, A3 size         Yellow Pad Paper         Brown Envelope, Long         Expanding Envelope, Long         Letter Envelope, White         Letter Envelope, Brown         Folder, Long         Fastener         Ink Eraser         Eraser, Staedtler         Mini Correction Roller 6m         Magic Tape, 18 mm, 33 mm         Cloth Tape, 1", 2" & 3"         Glue stick, 20 grams         Pencil Lead, 0.5mm 2B, HB, F         Ball pen         Sign pen         Paper Clip, 100pcs per box, 33mm	ream ream pad pc. pc. pc. pc. pc. pc. box each each each each roll roll roll roll roll each box each box	8         4         12         12         12         12         12         12         12         12

#### Construction of New Clark City Connecting Road to Industrial Park **Technical Specifications**

Dry Battery, AA	each	12
Colored Pencil, 12's	set	1
Staedtler Pencil (28, HB & F)	each	2
Marker (Stabilo)	pc.	2
Cartridge (Computer printer ink), colored	each	4
Toner (Copy machine)	each	1
Whiteboard Marker, black & red	each	2
Field Book	pc.	4
c) Consumable Stores (Monthly)		
Toilet Paper	roll	24
Insect Spray (Baygon), 350 g.	each	2
Toilet Deodorant and Hygienic	each	4
Hand/Toilet Soap	each	24
Floor Mop/ Rug	each	2
Replenishment of First Aid Kit	lot	2
Mineral Water (20 lit)	each	60
d) Utilities		
Electricity	mo.	24
Water	mo.	24
Telecommunication and Internet	mo.	24

# SCHEDULE E

# Monthly Provision for Laboratory Supplies and Consumables Stores

Description	Unit	Quantity
a) Laboratory Consumable (monthly)		
Anhydrous Sodium Chloride	bot.	2
Glycerine	bot.	1
Formaldehyde	bot.	1
Sodium Sulphate	bot.	4
Calcium Carbide Reagent	box	1
Sand Equivalent Stock Solution	bot.	3
Distilled Water	gal.	5
Color Standard Chart	set	1
Plastic Bags, 8"x 14" 0.00035 substance	each	100
Filter Screen, 15 cm, Box of 100	each	1
2" Masking Tape	each	12
Pentel Pen	each	10
Sacks for Sampling	each	100
Log Book	each	8
Field Book	each	10

<u>SCHEDULE F</u> Provision of Living Quarter Supplies and Consumables

	Description	Unit	Quantity
a)	LIVING QUARTER		
1	Polyester pillows, 30cm x 60cm x 15cm	pc.	20
2	Pillow cases, 40cm x 80cm	pc.	40
3	Bed Sheets, Cotton, 150cm x 200cm	each	20
4	Blankets, cotton, 160cm x 200cm	each	20
5	Mirror, 500 x 1200mm	each	2
b)	Consumable Items (per month X 30 months)		
1	Toilet paper	roll	14
2	Insect spray (Baygon) 350g	each	4
3	Toilet Deodorant	pc.	6
4	Toilet Soap	each	12
5	Floor mop rug	each	1
6	Dust Pan	each	1
7	Broom	each	1
8	Mineral water (20 liter)	each	28
c)	Utilities		
1	Electricity	mo.	24
2	Water	mo.	24

- 3. Delete Sub-item No. 4 in its entirety.
- 4. Delete Sub-item No. 5 in its entirety.

#### 5. Sub-item No. 6 of A.1.1 is supplemented as follows:

By way of maintenance, the Contractor shall provide all the necessary personnel specified under **SCHEDULE G** to maintain all the facilities in good operating condition, to adequately safeguard and secure the building, equipment and property day and night, all as directed and approved by the Engineer.

The Contractor is required to maintain and protect the Engineer's field office, living quarters and all utilities therein in good condition throughout the whole period for which the facility is required and to repair and/or replace broken items that become defective in any way. Should the Contractor fail to maintain, repair or replace any item when such is required or fail to supply any material, article or thing necessary within the specified time, the Engineer may deal with the matter himself in whatever manner he considers most appropriate, and all costs incurred by the Engineer shall be recoverable from any money due or which may become due to the Contractor.

The Contractor shall provide and pay for all connection charges in respect of electricity, water and internet facilities.

The Contractor shall provide emergency generators or power generating units with enough capacity to supply the power needed in case of local power failure. For potable water requirement, the Contractor shall furnish drinking water dispenser with purifier, including daily supply of loaded mineral water containers, to the satisfaction of the Engineer.

#### 6. Add the following paragraph at the end of Sub-section A.1.1:

All field office and living quarters furniture, fixtures and appliances except consumable items and fixed to buildings as permanent, shall be turned over to BCDA at the completion of the Contract. The Contractor shall be responsible for the maintenance of all items for turnover and shall ensure usable condition prior to turnover. The Contractor shall be responsible for the transport and turnover to BCDA/the Government agency/organization designated by the Engineer.

#### A.1.2 Vehicles for the Engineer

#### Modify the text of Sub-Section A.1.2 as follows:

#### A.1.2.1 Provision of Vehicles for the Engineer (On Rental Basis)

Within fifteen (15) days after the Commencement Date, the Contractor shall provide and deliver to the Site, the following brand-new vehicles on rental basis for the exclusive use of the Engineer and his staff:

3 units 4WD Pick-Up Type, Double Crew Cab, Service Vehicle, 2000cc or higher, Diesel Engine with factory installed air-conditioner

The Contractor shall submit catalogues in the English language of the proposed rented vehicles to the Engineer for his approval within seven (7) days after the

Commencement Date, and the final consent for the delivery of the rented vehicles on site shall be to the satisfaction of the Engineer.

All vehicles shall carry or be fitted with all tools and accessories as maybe prescribed by laws and with comprehensive insurances. They shall also be complete with seat belts for all seats, and shall be supplied with first aid kits, fire extinguishers, detachable magnetic flashing orange warning lights, accident warning triangles and any other safety kit requirements.

In case the Contractor fails to provide the aforesaid vehicles on the date required, the Engineer shall take such action as he deemed necessary, to acquire the usage of such vehicle and charge all relevant expenses to the Contractor.

The vehicles may be used by the Engineer both on and off the site and outside the project area, for business purposes during working hours and for other official purposes.

The rented vehicles shall be duly registered in the name of owner with all proper ownership documents kept by the Contractor together with a copy of contract of lease executed by the Contractor and the owner of the vehicle. These documents must be also furnished to the Engineer. Accordingly, when the assignments of the Engineer's personnel in connection with the execution of the Works have been completed, the vehicles shall be returned to the Contractor.

#### A.1.2.2 Drivers of Vehicles for the Engineer

The vehicles shall be driven by competent, qualified and experienced drivers recruited and paid for by the Contractor, including overtime payments and the like. All such drivers shall be under the direct full-time control of the Engineer.

All drivers shall be:

- properly licensed, with demonstrable previous experience driving under conditions prevailing on a major civil engineering construction site;
- able to read, write and speak English;
- available to work any hour on any day of the week including weekends;
- have the requisite flexibility to meet demands for their services at any time by the Engineer for any purpose under the Contract.

The Contractor shall manage and monitor the performance of drivers to ensure the provision and maintenance of drivers with a high level of skill and a demonstrated ability to drive efficiently and safely. Drivers not meeting these criteria shall be promptly replaced by the Contractor if and when so directed by the Engineer.

#### A.1.2.3 Operation and Maintenance of Vehicles

The Contractor shall be solely responsible for all activities and costs related to the operation and maintenance of the vehicles including fuel, oil, drivers' wages including overtime payment, its registration, provision of passes, access stickers and the like, and for providing fully comprehensive insurance until and including the date of issue of the Certificate of Completion; all costs thereof deemed included in the rates and prices in the BOQ.

The Contractor shall maintain the vehicles in first class condition and shall be supplied with appropriate fuel and lubricants at all times. He shall also undertake entirely all servicing and maintenance requirements for the vehicles, including regularly cleaning inside and out and providing all such replacement parts as maybe from time to time become necessary.

The Contractor shall provide equivalent substitute vehicles during the period when specified vehicles are taken out of service due to breakdown, for servicing, for maintenance, repair or any other reason. Should the Contractor fail to maintain, repair or replace any vehicle when such is required, the Engineer may deal with the matter himself in whatever manner he considers most appropriate, and all costs thereby incurred by the Engineer shall be recoverable from the Contractor and may be deducted from any money which is due or which may become due to the Contractor.

The vehicles shall comply in all respect, with all relevant Philippine national or local laws, statutes and regulations.

#### A.1.3 Assistance to the Engineer

#### Add the following paragraph at the end of Sub-section A.1.3:

The Contractor shall provide the personnel listed in **SCHEDULE G** who shall be under the direction of the Engineer for the entire project duration.

DESCRIPTION	Unit	Quantity
Field Office Personnel		
Utilityman	no.	2
Security Guard	no.	2

SCHEDULE G				
Personnel for the Assistance to the Engineer				

The Contractor shall provide the survey equipment, instrument and apparatus (minimum as listed in **Schedule H**) needed by the Engineer for inspecting and measuring the Works. The Contractor shall ensure that the instruments, equipment and apparatus are maintained in good condition for the whole project duration.

The Contractor shall supply wooden pegs, stakes, concrete blocks, survey monuments, steel pins, paints, hammers, saws, Engineer's field books, metal templates, straight edges, etc., to enable proper setting out and checking of the works.

The provision and use of the survey instrument, equipment and apparatus including consumables and the time, days, and works rendered by the survey personnel (Instrumentman, Levelman and Survey Aides) shall not be measured and paid for separately, it shall be deemed included in the rates and prices of the various items of work in the Contract.

# Survey Instruments/Equipment for the Engineer

Description		Quantity
Electronic Total Station, complete set (with tripod, 2 prism), 30x telescope magnification with 2x plug-in camcorder NIMH GEB 111, GKL 111 charger, RS232 interface cable for data transfer, GDF 111 Tribrach, laser plummet incorporation	set	1
Automatic Level complete with tripod 3x magnification, +/-0.80mm standard deviation, erect image telescope, 0.50m shortest focusing distance, with built-in compensator of less than 0.30" setting accuracy, fully waterproof and dust resistant with a horizontal circle that can be in grads or degrees and aluminum tripod. 2 pcs - Leveling rod (5m long) aluminum 1 pc. – Light Duty Tripod (Aluminum)	set	2
50m Fiber Glass Tape	each	2
5m Carpenter's Tape	each	8
Survey Umbrellas	each	2
Range Pole	pc.	2
Waterproof clothing (coat, rubber boots and hard hat)	lot	1

#### A.1.4 Photographs

#### Sub-section A.1.4 is supplemented as follows:

The Contractor shall provide a photographic record of the construction activities. Such photographs shall be taken before, during and after construction on the same angle of reference of sufficient number and as directed by the Engineer or under the following occasions or events:

- 1) When a portion of the work is difficult or impossible to inspect at the time of a particular operation, where a portion will be covered by backfill, or filling materials after completion and acceptance of the work by the Engineer.
- 2) When or where special or unusual features of the work or latent conditions on the site are present.

When taking photographs, the Contractor is required to observe that:

- 1) An indicator, such as scale, pole or similar item shall be placed thereon to signify or illustrate the relative dimensions of the pictures.
- Each picture shall be captioned and identified as to date, location, description of the work in progress or completed operation or activity or presence of unusual features.
- 3) Each picture shall be properly referenced, and with same angle as it was taken before, during and after construction.

4) The picture shall be clearly discernible in color having a dimension of not less than 12.5cm x 9cm.

All photographs shall be submitted at intervals of not less than one (1) month or as required, that represents the progress of the works. The photographs selected by the Engineer shall be compiled in albums together with the electronic files and shall be arranged in consecutive order and in accordance with the construction program submitted to and approved by the Engineer. All photographs retained by the Engineer shall become the property of BCDA.

#### A.1.5 Communication Facilities

#### Sub-Section A.1.5 is added to read:

Within fifteen (15) days from the commencement of the Works, the Contractor shall provide and maintain cellular phones for the exclusive use of the Engineer and his staff as listed in **Schedule I**.

The cellular phones shall be of good quality, brand new, ready for use, complete with accessories including provision for pre-paid cards worth one thousand pesos (P1000) per unit. In order to have continuous operation and efficient maintenance of the equipment, the Contractor shall also provide servicing and minor repairs, if needed.

The cellular phones will become the property of the BCDA at the end of the project.

DESCRIPTION	UNIT	QTY
<ul> <li>A. Cellular Phone (Standard Cellular Phone) Smartphone (SIM Slot) Android Octa-core 1.6 GHz Cortex-A-53 Fingerprint (front-mounted), accelerometer, proximity Non-removable Li-ion 3300 mAh battery 128 GB Storage, 6 GB RAM Flash Memory; 5.5 inches (~73.3% screen-to-body ratio) 13 MP, f/1.9, 28mm, autofocus, LED flash – Back camera 8 MP f/1.9</li> </ul>	Each	10
Note: Inclusive in the rate of operation and maintenance for communication facility are prepaid cards worth Php1000 per unit every month for the Contract duration.		

# Schedule I

Provide Communication Equipment for the Engineer

#### A.2 Measurement and Payment of Facilities for the Engineer

#### A.2.1 Measurement

#### Add the following at the end of Section A.2.1.

The works/items complied, supplied, installed and/or maintained in conformity with the Standard Specifications and the Special Specifications provided above and approved by the Engineer shall be measured for payment in accordance with the unit shown in the following Section A.2.2.

All material laboratory tests and quality control tests shall be performed by the Contractor through an accredited material testing center(s) duly approved by the Engineer. Necessary tests including the handling, transport, storage of specimen and the time, days and works rendered by the laboratory personnel and Materials Engineer shall not be measured separately, the attributable costs shall be deemed included in the contract rates and prices of the various items of work in the Contract.

Pay Item Number	Description	Unit of Measurement
A.1.1	Offices and Laboratory for the Engineer	
A.1.1 (3)	Construction of Field Office Building for the Engineer	Lump Sum
A.1.1 (10)	Provision of Living Quarters for the Engineer (Rental Basis)	Month
A.1.1(11)	Provisions of Furniture, Fixtures, Equipment and Appliances for the Field Office for the Engineer, (Schedule A)	Lump Sum
A.1.1(13)	Provision of Furniture/Fixtures, Equipment and Appliances for the Living Quarters for the Engineer, (Schedule B)	Lump Sum
A.1.1(16)	Operation & Maintenance of Field Office for the Engineer (including Schedules D and E)	Month
A.1.1(18)	Operation & Maintenance of Living Quarters for the Engineer (including Schedule F)	Month
A.1.2	Vehicles for the Engineer	
A.1.2(2)	Provision of 4x4 Pick-Up Type Service Vehicle for the Engineer on Bare Rental Basis	Month
A.1.2(5)	Operation and Maintenance of Pick-Up Type Service Vehicle for the Engineer	Month
A.1.3	Assistance to the Engineer	
A.1.3(1)	Provision of Field Office Staff for the Assistance to the Engineer	Month
A.1.4	Photographs	
A.1.4 (1)	Provision of Progress Photographs	Month
A.1.5	Communication Facility	
A.1.5(1)	Provide Communication Facility for the Engineer	Each
A.1.5(2)	Operate and Maintain Communication Facility for the Engineer	Each

# A.2.2 Basis of Payment

# Add the following at the end of Section A.2.2.

Payment will be made under PART A to read as follows:

# PART B

# **Other General Requirements**

### PART B - OTHER GENERAL REQUIREMENTS

# **B.1Offices, Shop, Store and Workmen's Accommodation** for Contractor

#### Add the following at the end of Item B.1 as follows:

The Contractor shall provide and maintain their field offices, stores, workshops latrines, housing and accommodations as are necessary. These shall be located in the Contractor's compound, distinct and separate from the Engineer's compound. The location, dimensions and layout of such buildings and places shall be subject to the approval of the Engineer.

The selection of the site shall be the responsibility of the Contractor and shall be approved by the Engineer. It is entirely up to the Contractor to make whatever arrangements he deems necessary with the landowners regarding the use or rental of land for the purpose of erecting camps, workshops, stockpiling of materials, locations of plant, housing for labor and staff, welfare facilities, etc. All costs incurred in connection with the rental or lease of such land shall be at the Contractor's expense.

The Contractor shall be solely responsible for the erection, maintenance and subsequent disposal of whatever facilities he deems necessary for the execution of the Works. The Contractor shall not be permitted to erect temporary buildings or structures within the road right-ofway without prior written approval from the Engineer

#### **B.2Medical Room and First Aid Facilities**

#### Item B.2 is supplemented as follows:

Medical and First–Aid Facilities: The Contractor shall provide and maintain throughout the duration of the Contract, a medical examining room and sickbay together with all necessary supplies and equipment to be sited in the Contractor's main camp. The rooms shall be used exclusively for medical purposes and shall be of good quality construction with electric lighting and otherwise suitable for its purpose. The sickbay shall have at least two (2) beds, and shall be provided with adjacent washing and sanitation facilities. The Contractor shall employ permanently on site at least one fully trained medical aide, nurse or paramedic who shall be engaged solely for medical duties.

The Contractor shall, at his own expense, provide first aid equipment at all camps and work sites to the satisfaction of the Engineer. He shall ensure that at all camps and works sites where 40 or more persons are engaged on the Works, a person qualified in first-aid with access to appropriate first-aid equipment shall be available at all times. The location of the medical room and other medical and first-aid arrangements shall be made known to all personnel by posting suitable notices at prominent locations around the site and by verbal instruction upon recruitment.

The Contractor's arrangements for complying with this Sub-Section shall be subject to the prior approval of the Engineer and also to the approval of any qualified Medical Officer designated by the Employer to inspect or supervise medical arrangements on the Site.

# **B.3Measurement and Payment**

Payment shall constitute full compensation for the compliance and provision of all the necessary first aid room and facilities with all the furniture and supplies including the salaries and wages of the medical staff assigned solely for the project.

Pay Item Number	Description	Unit of Measurement
B.2	Medical Room and First Aid Facilities	Lump Sum

# **B.4Construction Survey and Staking**

# B.4.2.1 General

# Modify the 2<sup>nd</sup> paragraph of Sub-Section B.4.2.1 as follows:

The Engineer shall furnish the Contractor all survey control points and reference data used in the design within two (2) weeks after the Commencement of Works. The Engineer and the Contractor shall conduct joint site inspection and confirm these at Site. The Contractor shall establish or re-establish all survey control points which are missing or required for centerline alignment setting out for approval of the Engineer.

# Add paragraph at the end of Sub-Section B.4.2.1 as follows:

The Contractor shall be responsible for the planned dimensions, elevations, levels and distances. For this purpose, he must perform re-surveying during the entire works period.

The Contractor shall conduct as-staked survey, including cross sections, not later than two (2) weeks prior to commencement of the concerned work in accordance with his work schedule, and shall prepare and submit shop/working drawings and method statement in accordance with the results of as-staked survey for approval of the Engineer.

# **B.4.2.3 Survey and Staking Requirements**

Add the following at the end of Sub-Section B.4.2.3.10, Borrow and Waste Sites:

The Contractor shall be responsible for the location of waste site(s) based on his earthwork and hauling plan and shall conduct topographic survey for layout and planning of waste material embankments. Location of waste site(s) shall be subject to approval by the Engineer.

# **B.4.3Method of Measurement**

# Modify B.4.3 with the following:

The following shall not be measured separately and shall be deemed included in the rates and prices of all other items of work in the BOQ:

- 1. Construction survey and staking
- 2. Slope reference and Clearing and Grubbing stakes

- 3. Centerline re establishment
- 4. Culvert survey and staking
- 5. Bridge and survey staking
- 6. Grade finishing stakes
- 7. Permanent monuments and markers
- 8. Miscellaneous survey and staking

### **B.4.4Basis of Payment**

#### Delete B.4 in its entirety and replace with:

No payment shall be made for the works enumerated in B.4.3.

#### **B.5Project Signboard**

### **B.5.1Project Signboard**

The Contractor shall install a total of four (4) Project signboards, one for each start and end points of the two (2) road sections of the Project, per COA Circular No 2013-004. Upon completion of the work, the signboards shall be removed from the site.

#### **B.5.2Method of Measurement and Payment**

Measurement of this item shall be made per each; such payment shall constitute full compensation for all materials, labor, equipment, tools and incidentals to the complete the work.

Payment will be made under:

Pay Item Number	Description	Unit of Measurement
B.5	Project Signboard	Each

#### **B.7Occupational Safety and Health Program**

#### **B.7.1Construction Safety and HealthProgram (CSHP)**

Prior to the Commencement of Works and mobilization, the Contractor shall submit to the Engineer a Construction Safety and Health Program (CSHP) proposed to be implemented for the Project in accordance with Department Order No. 13, Series of 1998 of the Department of Labor and Employment (DOLE). The proposed CSHP shall be approved by the BCDA for implementation, subject to the concurrence of DOLE. No Interim Payment shall be made to the Contractor unless an approved CSHP is in place for implementation.

Section 5 of the DOLE D.O. No. 13 provides that every construction project shall have a suitable CSHP. The required CSHP shall include but not limited to the following:

- 1) Composition of the Safety and Health personnel responsible for the proper implementation of CSHP;
- Specific safety policies which shall be undertaken in the construction site, including frequency of and persons responsible for conducting toolbox and gang meetings;
- 3) Penalties and sanctions for violations of the CSHP;
- 4) Frequency, content and persons responsible for orienting, instructing and training all workers at the site with regard to the CSHP which they operate; and
- 5) The manner of disposing waste arising from the construction.

Section 13 of the DOLE D.O. No. 13 requires that the Contractor shall provide continuing construction safety and health training to all technical personnel under his employ.

The Contractor shall be responsible for the safety of all its operations and holds specific health and environment obligations. The Contractor shall:

- comply with all health and safety regulations and the specific COVID 19 obligations on construction sites.
- ensure suitable arrangements for all necessary welfare and hygiene requirements and for the prevention of epidemics.
- Limit damage and nuisance to people resulting from the Contractor's operations and/or activities.

# **B.7.2**Construction Safety and Health Organization

To ensure that the CSHP are observed and implemented at the start of and during construction, each site shall have an established construction safety and health organization composed of the following personnel:

# 1) Safety Engineer/Officer

Section 7.1 of D.O. No. 13 states that "The General Contractor must provide a full time Officer, who shall be assigned as the General Construction Safety and Health Officer to oversee full time the overall management of the CSHP".

Section 7.2 states that "The General Contractor must provide for additional Construction Safety and Health Officer/s in accordance with the requirements for Safety Man / Officer of Rule 1033, Training and Personnel Complement, as amended by DOLE D.O No. 16 depending on the total number of personnel assigned to the CSHP at the site, under the direct supervision of the General Construction Safety and Health Officer."

On the part of the government, the implementing office shall designate, as part of their project staff, a Safety Engineer who shall be responsible for ensuring compliance with the pertinent DOLE guidelines, as well as the Guidelines on Occupational Safety and Health during the execution of the construction. The counterpart Safety and Health Officer of the Contractor shall closely coordinate and report to the Government Safety Engineer.

# **B.7.3Personnel Protective Equipment and Devices (PPE)**

Section 6 (Personal Protective Equipment) of DOLE D.O. No. 13 states that "every employer shall, at his own expense, furnish his workers with protective equipment for eyes, face, hands and feet, lifeline, safety belt/harness, protective shields and barriers whenever necessary by reason of the hazardous work process or environment, chemical or radiological or other mechanical irritants of hazards capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical agent".

All PPE shall be in accordance with the requirements of the Occupation Safety and Health Standards (OSHS) and

should pass the test conducted and/or standards sets by the Occupational Safety and Health Center (OSHC).

For General Construction Work, the required Basic PPE for all workers shall be Safety Helmet, Safety Gloves and Safety Shoes.

Special PPE shall be provided to workers in addition to or in lieu of the corresponding basic PPE as the work or activity requires.

# **B.7.4 Signage and Barricades**

Construction Safety Signage and Barricades shall be provided as a precaution and to advice the workers and the general public of the hazards existing in the worksite.

Road construction signage and barricades shall be in accordance with the DPWH Road Safety Manual and Handbook.

Section 16 of DOLE D.O. No. 13 requires that the employer shall provide the following welfare facilities in order to ensure humane working conditions:

- 1) Adequate supply of safe drinking water;
- 2) Adequate sanitary and washing facilities;
- 3) Suitable living accommodation of workers; and
- 4) Separate sanitary, washing and sleeping facilities for men and women workers.

The cost involved in providing the necessary safety equipment and manpower for an effective implementation of safety in the workplace, and in compliance with DOLE D.O. No. 13 shall be based on the following guidelines:

a) Personal Protective Equipment

The PPEs shall be provided by the Contractor which cost shall be duly quantified and made part of the overall cost of safety and health.

b) Clinical Materials and Equipment

Clinical material and equipment such as medicines, beds and linens, other related accessories shall be at the cost of the Contractor and shall be in accordance with the Rule 1960, Occupational
Health Services of OSHS.

c) Signage and Barricades

The quantities and cost for general signage and barricades necessary for promoting safety in and around the construction site shall be deemed to be included in the different items of work in the Contract.

d) Facilities

Facilities for all staff and labor engaged in the works such as portable toilets, waste disposal, sanitary and washing facilities, convenient dwelling and office, adequate lighting, and other facilities related to construction safety and health in accordance with OSH Standards other than facilities paid for under Part A, "Facilities for the Engineer" shall be deemed to be included in the overhead cost of the contractor.

e) Safety and Health Training

Costs associated for the provision of basic and continuing construction safety and health training to all safety and technical personnel shall be made part of the indirect/overhead cost of the project.

## **B.7.5Method of Measurement and Payment**

Works under this Section shall be measured per month. Such payment shall constitute full compensation for all materials, labor, equipment, tools and incidentals to fully comply with the requirements.

Payment will be made under:

Pay Item Number	Description	Unit of Measurement
B.7	Occupational Safety and Health Program	Month

In case of unsatisfactory or insufficient performance of the Contractor, the Engineer may apply corresponding deduction in the monthly rate based on evaluation.

# **B.8** Traffic Management

# **B.8.1 Traffic Management During Construction**

# **B.8.1.1 Traffic Control**

The Contractor shall submit a general traffic management plan within fifteen (15) days of the Commencement of Works for approval of the Engineer. The Contractor shall submit specific plan for each work site at least fifteen (15) days before start of the traffic control for approval of the Engineer and shall explain to the residents and concerned organizations, including schools, through the Barangay Office.

The Contractor shall ensure that signs are adequately posted on all works (see Table in B.8.1.2.7) especially when restrictions on the width of the road are imposed due to construction works. The Contractor shall provide details in writing to the Engineer for his approval at least 15 days in advance of the works. Upon receipt of the Engineer's approval, advance warning signs, coning and bunding, stop and give way signs, other appropriate signs and lighting shall be provided and maintained by the Contractor in accordance with his proposals. The Contractor shall constantly monitor the effectiveness of the signs and lighting devices.

The Contractor shall man all full, partial and temporary road closures day and night. All operatives shall be trained and fully aware of their responsibilities. These shall include achieving minimum description to traffic consistent with the safety of pedestrians, construction operatives and supervisory staff and vehicular traffic.

If needed, a construction area shall be bounded by steel fence as directed by the Engineer. Informatory, regulatory and warning signs with proper lightings shall be installed wherever necessary. The Contractor shall coordinate his traffic management with the concerned government agencies and concerned private parties. The Contractor shall furnish, install and maintain at all times for the duration of the Contract, necessary traffic signs, barricades, lights, signals and other traffic control devices and shall provide flagging and other means for guidance of traffic through the work zone. Traffic control shall be conducted in accordance with the prevailing government rules and regulations. All traffic signs and control devices furnished and installed by the Contractor shall be reviewed by the Engineer as to location, position, visibility, adequacy and manner of use under specific job conditions.

All traffic control devices necessary for the initial stage of construction shall be properly placed and in operation before any construction shall be allowed to start. When work of a progressive nature is involved, the necessary signs shall be moved to adjust to advancing operation.

If at any time the Engineer determines: (i) proper provisions for safe traffic control are not being provided or maintained, or (2) serious or willful disregard for the safety of the public or personnel, the Engineer may restrict construction operations affected by such defective signs or devices until proper satisfactory adjustments shall have been made or may suspend the entire work until the proper level of compliance is achieved.

The Contractor if needed shall provide on the site towing equipment to move stalled vehicles out of the traveled way to locations with no interference to traffic and the possibility of an accident.

# **B.8.1.2 Traffic Handling Equipment and Devices**

Traffic handling equipment and devices damaged from any cause during the progress of the work shall be repaired, including painting if necessary, or replaced by the Contractor at his own expense.

When traffic control devices furnished by the Contractor are no longer needed for controlling traffic, they shall be removed from the site of work.

# **B.8.1.2.1** Barricades

All barricades, fences and such other aids, as required, shall be provided with reflectors conforming to regulations and shall be illuminated at night. Barricades shall be constructed of lightweight commercial quality materials as approved by the Engineer.

Markings for barricade rails shall be alternate orange and white stripes. Reflective sheeting shall be replaced on rail surfaces in such a manner that no air bubbles or voids are present between the rail surface and reflective sheeting. The predominant color for barricade components other than rails shall be white, except that unpainted galvanized metal or aluminum may be used.

Ballasting shall be by means of sand filled bags placed on the lower parts of the frame or stays, but shall not be placed on top of the barricade or over any reflectorized barricade rail face facing the traffic.

If the barricades are displaced or are not in an upright position, from any cause, said barricades shall immediately be replaced or restored to their original location, in an upright position at the Contractor's own expense. The Contractor shall install fences at the bridge or other construction sites instructed by the Engineer to prevent the residents, peopleand animals entering the construction site.

# **B.8.1.2.2** Flashing Arrow Signs

Flashing arrow signs shall be finished with commercial quality flat black enamel and shall be equipped with yellow or amber lamps that form arrows or arrowheads are required. Each lamp shall be provided with a visor and an electronic circuit that will provide between 30 to 45 complete operating cycles per minute in each of the displays and modes specified shall control the lamps. The control shall include provisions for dimming the lamps by reducing the voltage to 50 percent,  $\pm 5$  percent, for nighttime use. Type I signs shall have both manual and automatic photoelectric dimming controls. Dimming in both modes shall be continuously variable over the entire dimming range.

Flashing arrow signs shall conform to the following legibility requirements. The minimum legibility distance is the distance at which flashing arrow signs shall be legible at noon on a cloudless day and at night by persons with vision of or corrected to 20/20.

Туре	Minimum Size	Min. Number of Panel Lamps	Min. Legibility Distance
Ι	1220 mm x 2440 mm	15	1600 m
II	610 mm x 1220 mm	13	1200 m

Flashing arrow signs shall be capable of being operated in 4 different display modes as follows. The display to be used shall be as directed by the Engineer.

- 1) Pass Left Display
- 2) Pass Right Display
- 3) Simultaneous Display
- 4) Caution Display

Flashing arrow signs shall also be capable of operating in one or both of the following modes, at the option of the Contractor:

- 1) Flashing Arrow Mode
- 2) Sequential Mode

In the flashing arrow mode, all lamps forming both the arrowhead and shaft shall flash on and off simultaneously. In the sequential mode, either arrowheads or arrows shall flash sequentially in the direction indicated. In the caution display mode, a combination of lamps not resembling any other display or mode shall flash.

Each flashing arrow sign shall be mounted on a truck or on trailer and shall be capable of operating while the vehicle is moving and shall be capable of being placed and maintained in operation at locations as shown on the Drawings, or as directed by the Engineer.

Flashing arrow signs shall be mounted to provide a minimum of 2.10 meters between the bottom of the sign and the roadway. Trailers on which flashing arrow are mounted shall be equipped so that they can be leveled and plumbed.

Electrical energy to operate the sign shall be obtained from the vehicle on which the sign is mounted or from a generating plant mounted on said vehicle. Regardless of the sources, the supply of electrical energy shall be capable of operating the sign in the manner specified.

# **B.8.1.2.3** Portable Delineators

Portable delineators, including the base, shall be composed of a material that has sufficient rigidity to remain upright when unattended and shall be either flexible or collapsible upon impact by a vehicle. The base shall be of such shape as to preclude roll after impact.

The base shall be of sufficient weight or shall be anchored in a manner such that said delineator shall remain in an upright position. Ballast, if used for the bases of portable delineators, shall be sand or water.

If the portable delineators are displaced or are not in an upright position, the Contractor shall immediately replace or restore to their original location, in an upright position, the said delineators.

The vertical portion of the portable delineators shall be of a fluorescent orange or predominantly orange color. The posts shall be not less than 76 mm in width or diameter. The minimum height shall be 910 mm above the travelled way and/or as shown on the Drawings.

A minimum of 2 reflective bands each (not less than 76 mm wide), shall be mounted at a minimum distance of 38 mm and with a height on the post so that one reflective band will be between 0.76 mm and 0.91 m above the roadway surface.

Reflective bands shall be white and shall be fabricated from flexible reflective sheeting as specified in the special provisions. The reflective bands shall be visible at 305 meters at night under illumination of legal high beam headlights, by persons with vision of or corrected to 20/20.

Only one type of portable delineator shall be used on the project. The type of portable delineator proposed for use on the project shall be submitted to the Engineer for approval prior to placement on the project.

# **B.8.1.2.4** Portable Flashing Beacons

Each portable flashing beacon unit shall consist of a lighting unit, a flasher unit, a standard, a battery power source and a base. The units shall be assembled to form a complete, self-contained, flashing beacon that can be delivered to the site of use and placed for immediate operation.

The lens for the beacon lighting unit shall have a visible diameter of 300 mm. The lens shall be glass or plastic conforming to the provisions in ANSI Standard: D-10 for yellow traffic signal lens.

The beacon lighting unit shall be provided with a 200 mm minimum length of visor and a back plate. Visors will not be required during the hours of darkness.

The flasher unit shall provide 50 to 60 flashes per minute with 250 to 350 milliseconds dwell time.

The standard shall be adjustable to provide a variable mounting of the lighting unit between 1.8 and 3 meters measured from the bottom of the base to the center of lens, with provisions for securing the standard at the desired height. The standard shall be securely attached to the base and a sufficient length of multi-conductor, neoprene jacketed cable as required for full vertical height shall be provided.

The base shall be large enough to accommodate a minimum of two 12- volt, automotive type storage batteries and shall be of such shape and weight that the beacon will not roll in the event it is struck by a vehicle or pushed over.

The lamp shall be rated at 25 watts for operation on 12-volt battery current.

The flashing beacon assembly shall be weatherproof and shall be capable of operating a minimum of 150 hours between battery recharging and other routine maintenance. The standard and base shall be finished with 2 applications of commercial quality orange enamel. The interior of the visor and the front face of the back plate shall be finished with 2 applications of commercial quality flat black enamel.

# **B.8.1.2.5** Construction Area Signs

The term "Construction Area Signs" shall include all temporary signs required for the direction of public traffic through or around the work during construction. Construction area signs shall be installed at locations proposed by the Contractor and approved by the Engineer.

All sign panels shall be the product of a commercial sign manufacturer, and shall be as specified in these specifications.

Sign panels for all construction area signs shall be visible at 150 meters and legible at 90 meters at noon on a cloudless day and at night under illumination of legal low beam headlights, by persons with vision of or corrected to 20/20, except that the nighttime requirement shall not apply to fabric sign panels for portable signs. The Contractor may be required to cover certain signs during the progress of the work. Covers for construction area signs shall be of sufficient size and density to completely block out the message so that it is not visible either during the day or at night. Covers shall be fastened securely to prevent movement caused by wind action. The Contractor shall clean all construction area sign panels at the time of installation and as often thereafter as the Engineer determines to be necessary, but at least once every 4 months.

Signs with the specified sheeting material will be considered satisfactory if they conform to the requirements for visibility and legibility and colors conform to the requirements as directed by the Engineer. A significant difference between day and night times reflective color will be grounds for rejecting signs.

To properly provide for changing traffic conditions and damage caused by public traffic or otherwise, the Contractor shall be prepared to furnish on short notice additional construction area sign panels, posts and mounting hardware or portable sign mounts. The Contractor shall maintain an inventory of the commonly required items at the jobsite or shall make arrangements with a supplier who is able, on daily basis, to furnish such items on short notice.

# **B.8.1.2.6 Stationary Mounted Signs**

Stationary mounted signs shall be installed on wood posts in accordance with the following guidelines:

- 1) Use of back braces and blocks for sign panels will not be required.
- 2) The height to the bottom of the sign panel above the edge of travelled way shall be at least 1.50 meters, except when the sign is located in the path of pedestrians or bicycles, then the height to the bottom of the sign panel above the edge of the travelled way shall be at least 2.10 meters.
- 3) Construction area sign posts may be installed on above ground temporary platform sign supports as approved by the Engineer, or the signs may be installed on existing lighting standards or other supports as approved by the Engineer. When the construction area signs are installed on existing lighting standards, holes shall not be made in the standards to support the sign.
- 4) The post embedment shall be 0.76 meter. If post holes are backfilled around the posts with Portland cement concrete produced from commercial quality aggregates and cement with not less than 168 kilograms of cement per cubic meter. Post size and number of posts shall be as shown on the plans, except that when stationary mounted signs are installed and the type of sign installation is not shown on the plans, post size and the number of posts will be determined by the Engineer. Posts shall be good sound wood post, suitable for the purpose intended.

Sign panels for stationary mounted signs shall consist of reflective aluminum sheeting. Sign panels shall conform to the requirements specified in Item 605-Road Sign. Legend and border may be applied by a screening process or by use of pressure sensitive cut-out sheeting. Size and spacing of letters and symbols shall be as depicted on the sign specification sheets published by the Department. All rectangular sheet aluminum signs over 140 centimeters measured along the horizontal axis and all diamond-shaped sheet aluminum signs, 152 centimeters and larger shall be framed unless otherwise specified. Frames shall be constructed in accordance with Item 605 (Road Signs). Sign panel fastening hardware shall be commercial quality.

# **B.8.1.2.7** Portable Signs

Each portable sign consists of a base, standard or framework and a sign panel. The units shall be capable of being delivered to the site of use and placed in immediate operation.

Sign panels for portable signs shall conform to the requirements of sign panels for stationary mounted signs in Section, "Stationary Mounted Signs" or shall be cotton drill fabric, flexible industrial nylon fabric, or other approved fabric.

Fabric signs shall not be used during the hours of darkness. Sizes, colors and legend requirements for portable signs shall be as described for stationary mounted sign panels in said Sub-Section "Stationary Mounted Signs".

The sign standard or framework shall be capable of supporting a sign panel of 120 centimeters by 120 centimeters maximum dimension, in an upright position with the center of the sign panel a minimum of 1.50 meters above the pavement.

All parts of the sign standard or framework shall be finished with 2 applications of orange enamel that will match the color of the sign panel background. Testing of paint will not be required.

If portable signs are displaced or overturned, from any cause, during the progress of the work, the Contractor shall immediately replace the signs in their original locations at his own expense.

Item	Specification
1. General	The Contractor shall provide one-way traffic control along sections with on- going construction for a length of 200 meters or less, except for the repair of small areas of damaged concrete slabs. In these areas, the Contractor shall provide one-way traffic control devices beginning and ending 50 meters from the work area. Sign, delineators, warning lights and flagmen shall be posted and maintained as described in Items 2, 3 and 4.
2. Signs	1.2 x 1.3-meter square plywood painted reflective white with 12-centimeter reflective red letters shall be installed at 50-meter intervals commencing 150

Traffic Control Signs, Delineators and Warning Lights

	meters from the work site. The signs shall be 1.2 high and placed on the edge		
	of pavement facing the traffic flow. Signs shall have the following wordings:		
	SLOW-LANE or ROAD CLOSED AHEAD; CAUTION: ROAD		
	CONSTRUCTION AHEAD; REDUCE SPEED, CONSTRUCTION IN		
	PROGRESS; STOP, OBEY FLAGMEN; REDUCE SPEED, ONE LANE		
	AHEAD.		
3. Delineators	Reflective red or orange plastic or rubber cones 45 centimeters high shall be		
	placed at 30-meter intervals along the traffic side of the restricted area.		
4. Warning	Amber flashing lights with a 15-centimeter diameter lens head shall be		
lights	provided at all sign location. The intensity of the lights shall be at least 4		
	candlepower and have a flash rate between 50-75 flashes directing traffic		
	movement.		

### **B.8.1.2.8 Telescoping Flag Trees**

Telescoping flag trees shall be of good commercial quality material, suitable for the purpose intended and shall be capable of maintaining an upright position at all times while in use.

## **B.8.1.2.9** Traffic Cones

Traffic cones shall be fluorescent and of good commercial quality, flexible material suitable for the purpose intended. The outer section of the portion above the base of the cone shall be translucent and be of highly pigmented fluorescent orange polyvinyl compound. The overall height of the cone shall be at least 710 millimeters and the bottom inside diameter shall be not less than 267 millimeters. The base shall be of sufficient weight and size or shall be anchored in a manner such that the traffic cone will remain in an upright position.

During nighttime, traffic cones shall be affixed or covered with a minimum 330 millimeters flexible reflective cone sleeve, placed at maximum of 76 millimeters from the top of the cone. The sleeves shall be white and shall be fabricated from the reflective sheeting. The reflective sheeting shall be visible at 305 meters at night under illumination of legal high beam headlights, by persons with vision of or corrected to 20/20.

Traffic cones placed during daytime shall not be fastened with reflectorized cone sleeves.

### **B.8.2**Maintenance of Project Road and Traffic Control

#### **B.8.2.1** Provisions for Passage of Traffic

The Contractor shall carefully plan his traffic control arrangement and liaise with all concerned parties to advise and seek agreement on the most acceptable traffic management practices. Diversions as needed shall be fully signed and lighted when implemented. Safety of all parties using and working on the road shall be paramount. The Contractor shall be required to provide and maintain effective protective fences, bunding, etc. below slope works and to define the edges of steep excavations or existing down slopes, and provide signage and lighting as necessary.

The Contractor shall construct and maintain detour wherever the work will interfere with traffic on existing roads, footways or other ways over which there is a public or private right-of-way. No detour shall be constructed and no traffic diverted until the Contractor's proposals have been approved by the Engineer and by the appropriate government authorities. Prior to the commencement of the construction and of the use of detour, the Contractor shall provide the Engineer with a full photographic record of the existing road, pathway, etc. as directed by the Engineer and shall have the necessary temporary road signs ready for use.

No work that will cause inconvenience to the traveling public shall be started until adequate provisions, satisfactory to the Engineer, have been made to divert the traffic in safety and in comfort. No road shall be closed to the public except by permission in writing from the Engineer and from the appropriate government authorities. Material stored upon the roadway shall be so well placed and the work shall be so conducted as to cause as little obstruction as possible to the traveling public.

# B.8.2.2 Detour

All detours if needed shall be maintained in good condition at all times and shall have a total width of at least six (6) meters and provided with graveled surface having a minimum compacted thickness of 150 mm. Riding condition shall be at all times good and dust controlled. Such detour road shall be removed if so directed by the Engineer.

The Contractor shall so conduct his operations as to offer the least possible obstruction, inconvenience and delay to traffic and shall be responsible for adequate traffic control to achieve such an end.

Suitable warning signs, illuminated at night by electric bulbs, lanterns or flares shall be provided to mark the places not yet available to traffic. In part-width construction, the Contractor shall place acceptable barricades along the inside edge of the available surface so that traffic will be confined therein while the other part-width is under construction. One-way control shall continue until the adjoining surface is completed and opened to traffic.

At sections where part-width traffic is in operation, and when so ordered by the Engineer, the movements of the Contractor's equipment from one place of work to another shall be subject to such part-width traffic control. Spillage resulting from hauling operations along or across the roadway shall be removed immediately at the Contractor's expense. For further details in connection with this Item refer to Item B.8.1 - Traffic Management During Construction.

# **B.8.2.3 Education of Drivers and Assignment of Traffic Security Personnel**

The Contractor shall educate drivers, including those of subcontractors and suppliers, for safe driving, especially on public roads where school childrenare passing. The Contractor shall minimize their vehicle passages during school in and out hours. The Contactor shall assign traffic control security personnel near the schools if existing.

## **B.8.2.4 Overload Control**

Under Republic Act (RA) No. 8794 of 2000 also known as "Act Imposing a Motor Vehicle User's Charge on Owners of All Types of Motor Vehicles and For Other Purposes", the maximum allowable Gross Vehicle Weight (GVW) limits are set out. The DPWH, DOTC and DILG issued a Joint Circular in accordance with the Implementing Rules and Regulations (IRR) of RA 8794 in 2001 and defined the maximum GVW of trucks and trailers and their axle load limit at 13.5 tons. In addition, weight limits have been imposed on most of the bridges. The Contractor shall be liable to follow these act and regulation.

In case mobilization of special heavy equipment is required to mobilize, the Contractor may require a special permission from the concerned authorities.

## **B.8.3**Contractor's Liability and Responsibilities

The Contractor shall be fully liable for traffic control and safety. Approval by the Engineer of the Contractor's traffic control and signage proposal will, in no way be construed as relieving the Contractor of any of his obligation or liabilities.

#### **B.8.4Method of Measurement and Payment**

Works under this Section shall be measured by month. Such payment shall constitute full compensation for all materials, labor, equipment, tools and incidental to fully comply with the requirements.

Payment will be made under:

Pay Item Number	Description	Unit of Measurement
B.8	Traffic Management	Month

In case the performance of the Contractor is not satisfactory or insufficient, the Engineer may apply corresponding deduction in the monthly unit price based on evaluation.

# **B.9Mobilization / Demobilization**

# **B.9.1 General Requirement**

The work and other activities for the item, Mobilization and Demobilization shall include but not necessarily be limited to the following:

- The use or rental of all land required for the Contractor's base camps and construction facilities, including number, location, area, etc. shall be as approved by the Engineer and shall be fully consistent with the rock, aggregate and/or concrete production quantity, and other requirements for the Works. Also, the operational capacity of the Construction Plant to be used by the Contractor, the location of suitable material sources and the Contractor's construction schedule shall be used as bases in the establishment of the Contractor's camps.
- 2) The removal of the Constructional Plant from the existing site locations or port of unloading in the Philippines and their installation to the sites where they are to be used under this Contract.
- 3) The construction and maintenance of the Contractor's base camps including offices, living quarters, workshops, stores, etc.
- 4) Mobilization and Demobilization of the Contractor's labor forces in accordance with

National Law and Regulations. The Contractor shall comply with all the relevant labor Laws applicable to the Contractor's Personnel, including Laws relating to their employment, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights. The Contractor shall require his personnel to obey all applicable Laws, including those concerning safety at work.

The mobilization activities of the Contractor shall include the provision of all base camp sites, plant, buildings, facilities, equipment and vehicles which will be required for the proper execution of the whole of the Works. This provision is regardless of the timing or staging of handover of the Site to the Contractor and of the intended timing or staging of occupation or use of the base camps, plant, buildings, facilities, equipment and vehicles throughout the Contract Period.

Demobilization from the sites occupied by the Contractor at the end of the Contract including the removal of all installations, Constructional Plant and equipment from Employer – owned or rented land, and the restoration of the site in accordance with the contract, shall also be included in this Item.

## **B.9.2Method of Payment**

The Contractor shall complete the mobilization of all major equipment and plants intended for early works within one hundred eighty (180) calendar days or as per schedule approved by the Engineer after the Commencement of Works.

The payment for Mobilization and Demobilization shall be measured at contract "Lump Sum" price under:

Pay Item Number	Description	Unit of Measurement
B.9	Mobilization / Demobilization	Lump Sum

Mobilization component represents sixty percent (60%) of the lump sum price and paid pro-rata with the actual mobilization. Demobilization component is forty percent (40%) of the lump sum cost and paid after the Contractor has fully demobilized all plant and equipment, labor, and has fully restored sites in accordance with the Contract.

## **B.14Environmental Management and Monitoring**

# **B.14.1 Scope of Work**

The Contractor shall take full responsibility for performing the work minimizing environmental negative effects and damage that may occur pursuant to his construction operations.

The Contractor shall prepare and implement the site-specific Environment Management Plan (EMP) in complying with all applicable government/ local laws and regulations in the country as well as referring to the Environmental Impact Statement (EIS) report of the Project describing the requirement of environmental protection during the entire duration of this Contract. The Contractor shall also refer to the Environmental Compliance Certificate (ECC) issued by Department of Environmental and Natural Resources (DENR), and related ADB Environmental studies for the NCC. The Contractor shall be primarily responsible and accountable for the actions and activities of his subcontractors and suppliers, and for their compliance with the EMP.

The Contractor shall assume the responsibility of securing all the necessary licenses, permits, clearances and their attendant costs and fees prior to start of any construction activities. The Contractor shall coordinate with the Employer/ the Engineer thereon to fulfill such requirements.

The Engineer will notify the Contractor in writing of any observed noncompliance with relevant laws, regulations, permits and other elements of the Contractor's EMP. The Contractor shall, after receipt of such notice, inform the Engineer of proposed corrective actions and take such actions, at his own cost, immediately as approved by the Engineer. If the Contractor fails to comply promptly, the Engineer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extension therefore shall be granted to the Contractor for any such suspensions.

The Contractor shall provide and maintain at his own cost the personnel, equipment and facilities necessary for a fulfillment of the requirements of Environment Protection.

## **B.14.2** Submittals

#### 1. Environment Management Plan (EMP)

The Contractor shall submit a site specific EMP to the Engineer for approval not later than fourteen (14) calendar days after the Commencement of Works. Any construction operation shall not begin until the Engineer has approved the EMP. The EMP shall include a series of management plans as below:

- Sediment and erosion control plan for each Site;
- > Camps management plan for each camp;

- ➢ Waste management plan;
- Pollution control (water, air, noise and vibration) plan for each Site;
- ➤ Traffic management plan;
- Standard Operating Procedures for pollution spills, and management of fuels and hazardous substances.

These plans above shall be compiled by using information below:

- a) Organization and lines of responsibilities including subcontractors and suppliers
- b) Methods of protection of features to be preserved such as trees/vegetation, soil, landscape features, air and surface/ ground water, fish and wildlife, historical, archaeological and cultural resources.
- c) Procedures to be implemented to provide the required environmental management, to comply with the applicable laws and regulations, and to correct pollution due to accident, natural causes, or failure to follow the procedures of the EMP
- d) Drawings showing locations of any proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, stockpiles of excess or spoil materials and sanitary facilities and solid waste disposal areas
- e) Training for Contractor's personnel during the construction period

The approval by the Engineer shall not relieve the Contractor of any of his responsibility for the Environment Protection pursuant to his construction operations. Furthermore, the Engineer shall have the right to require the Contractor to improve the approved EMP whenever it is deemed necessary in the opinion of the Engineer.

#### 2. Environment Monitoring Report

The Contractor shall submit an Environmental Monitoring Report to the Engineer for his review every month, for the entire Contract duration, within 7 days after the last day of the period to which it relates.

## **B.14.3 Relevant Statutes and Baseline Survey**

The Contractor shall at all times comply with all existing statutes in the Country concerning environmental protection, pollution control and abatement that are applicable to his construction operations. Such statutes include, but are not limited to the following;

# 1. Assignment of Environmental Protection Manager (EPM)

The Contractor shall assign an Environment Protection Manager (EPM) on a fulltime basis. The curriculum vitae of the proposed EPM describing the qualifications shall be submitted to the Engineer for approval prior to the assignment.

## 2. Baseline Survey

The Contractor shall conduct in the presence of the Engineer the baseline survey and tests for recording the quality and condition of water, air, flora, fauna and other items before the start of the construction in accordance with the Environmental Monitoring During Construction Stage attached at the end of this Part B.14. The survey shall cover areas directly and indirectly affected by the construction, including the camp, plant yards and material disposal sites. The Contractor shall submit a comprehensive report for approval to the Engineer, Employer and other concerned departments and agencies.

# **B.14.4 Terrestrial Environment**

## 1. Vegetation and Wildlife

The Contractor shall minimize interference with, disturbance to, and damage of vegetation and wildlife. The Contractor shall take appropriate measures as may be necessary to prevent his personnel from hunting, disturbing, capturing, or destroying wildlife specified by the relevant laws and regulations. The Employer handles the tree removal in the Site designated by the Employer. However, in the case that additional tree removal will be required for the construction work within the Site designated by the Employer, the Contractor shall follow instructions by the Engineer for necessary process.

## 2. Landscape

The Contractor shall define all activities at the Site defined by the drawings and specifications. Except in areas indicated on the drawings or specified for clearing, the Contractor shall not destroy topsoil and land forms without the permission of the Engineer. Any unpermitted destruction, scarring, damage, or defacing of the landscape pursuant to the construction operations shall be corrected to the satisfaction of the Engineer at the Contractor's expense.

Pay attention to keep construction materials, machines, vehicles, workers' camps and many more not to disturb the landscape of the project area, keeping clean storage sites for the construction equipment.

#### 3. Soil erosion

The Contractor shall effectively prevent erosion and control sedimentation through approved methods including, but not limited to, the following:

- Retardation and control of runoff
- Erosion and sedimentation control devices
- Sediment basins

## **B.14.5 Water Resources**

The Contractor shall keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters. Toxic or hazardous chemicals shall not be applied to soil or vegetation when such application may cause contamination of the fresh water reserve.

Proper treatment of water pollutants generated from construction works for example settling ponds or a simple water treatment system to comply with effluent level in the standards in the Philippines. Also, the following adequate preventive measures shall be taken as necessary:

- Provide appropriate protection or construction methods minimizing cut and fill soils washed into streams including waste/excess soil disposal sites.
- Surface runoff from the Site shall be directed to silt traps or sedimentation basin with the help of channels before discharge.
- Monitoring water quality during construction.

## **B.14.6** Air, Noise and Vibration

The Contractor shall keep construction activities under surveillance and control to minimize environment damage by air contamination, noise, vibration, odors and/or other disturbances.

Dust particles pursuant to production and preparation of

vehicles and materials shall be controlled at all times. The Contractor shall maintain excavations, stockpiles, haul roads, permanent and temporary access roads, spoil areas, and other work areas within or outside the Site free from particulate which would cause a hazard or a nuisance to persons and/or damage crops, orchards, cultivated field and dwellings. A discharge of dust into the atmosphere shall be controlled during processing, handling and storing cement materials. The Contractor shall daily spray water, except rainy days, to control dust on its gravel or earth access roads.

Night time operations producing a high level of noise and/or vibration shall be performed only at time and places approved by the Engineer. Temporary noise barriers, or acoustic screens or enclosures shall be used at the Site close to the residential houses to shield residences from the noise as necessary. The Contractor shall indemnify the Employer/the Engineer from any liability for damages due to noise, vibration and/or other disturbances caused by his construction operations and also from all claims relating to such liability.

Equipment and vehicles shall be maintained and operated at all times in such a condition as not discharge excessive exhaust gases due to poor engine adjustments or other inefficient operating conditions. The Contractor shall likewise ensure that all equipment and machinery are in proper working condition so as to minimize the amount of noise and vibration generated. The Engineer may require, at his discretion, the Contractor to replace any equipment, machinery or vehicles emitting excessive exhaust gases, noise and/or vibration.

# **B.14.7 Waste Disposal**

The Contractor shall dispose any kind of waste pursuant to his construction operations in compliance with the relevant laws and regulations in the Philippines. The Contractor shall pay any fees or charges required.

The Contractor shall treat the vegetative wastes and construction wastes separately at the dumps approved by the relevant local authorities and the Engineer. The Contractor shall be responsible for making necessary arrangements with BCDA, private parties and with the relevant local authorities for the location of such dumps.

Solid wastes shall be placed in containers that can be emptied on a regular schedule. Handling and disposal shall be conducted to prevent contamination. Segregation measures shall be employed so that no hazardous or toxic waste will become co-mingled with solid waste. Chemicals shall be dispensed ensuring no spillage to ground or water. Periodic inspections of dispensing areas to identify leakage and initiate corrective action shall be performed and documented by the Contractor. Chemical waste shall be collected in corrosion resistant, compatible containers.

The Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing and shall collect waste in suitable containers observing compatibility. Spills of hazardous or toxic materials shall be immediately reported to the Engineer. Clean up and the costs arising therefrom due to spills shall be the Contractor's responsibility.

# **B.14.8 Social Considerations**

The Contractor shall pay attention to the public morality of his staff and labors including his subcontractors both on and off the Site. In the interest of good community relations, the Contractor and his subcontractors shall be circumspect in dealings with people residing in the neighborhood of the Site and take adequate efforts to avoid any disturbance to them. The Contractor shall, in his responsibility, arbitrate any dispute arising between his personnel and persons in the neighborhood of the Site. Unskilled labor shall preferably be employed from the towns/villages affected by the Works. Also, the Contractor shall distribute prior information of construction works as following but not limited through installation of signboards informing the residents who live in and around the construction area.

- > Starting and completion date of construction works
- Location of construction work (dredging and disposal work)
- Notices of the construction work etc.
- Method of grievance (contact person and contact number, etc.)

# **B.14.9 Environmental Mitigation Measures and Monitoring**

The Contractor shall perform environmental monitoring for the duration of this contract and submit results to the Engineer. The minimum requirement for items, frequency and number of locations of sampling or measurement shall be as indicated in Attachment to Part B.14, and the detail shall be confirmed in the updated EIS report to be approved by the Engineer/the Employer and DENR.

## **B.14.10 Measurement and Payment**

All cost related including necessary testing equipment

needed to the implementation and execution of "Environmental Management and Monitoring" shall be measured and paid monthly. No separate payment shall be made for the baseline survey to be conducted prior to the physical construction activities but considered distributed and included in the monthly rate.

No separate payment shall be made for the "Environment Monitoring" which might be directed by the Engineer to confirm the final affects during or at the end of the Defect Liability Period.

Payment will be made under:

Pay Item Number	Description	Unit of Measurement
B.14	Environmental Management and Monitoring	Month

## **B.15Detour / Access Road**

# **B.15.1Description**

Detour and access roads if needed for construction of roadway, culverts and other works, shall consist of furnishing all materials, equipment, and labor as outlined in this specification and on the drawings or as directed by the Engineer.

# **B.15.2 Material Requirements**

Refer to:

- Excavation shall conform to the requirements of Item 102;
- Embankment shall conform to the requirements of Item 104;
- Aggregates base, minimum 200mm thick, shall conform to the requirements of Item 300;
- Pipe culverts, if planned, shall conform to the requirements of Item 500;
- Gabion, if planned, shall conform to the requirements of 511;
- Other materials as specified in the Standard Specifications.

# **B.15.3**Construction Requirements

When needed to use existing gravel roads, the Contractormay be required to spread additional aggregate subbase materials and compact them for use. The Contractor shall be responsible for maintenance, leveling, compaction and dust control of the detour/access road as approved by the Engineer.

# **B.15.4 Method of Measurement and Payment**

Detour/access road construction and maintenance shall not be measured and paid separately. The cost of detour/access road construction and maintenance shall be deemed included in the rates and prices of Item B.8 (Traffic Management) and of the relevant items of work for the completion of the work.

## **B.17Temporary Diversion of Waterway**

# **B.17.1 Description**

This Item shall consist of diversion of the upstream and downstream of existing waterways or creeks in accordance with the lines, grades, elevations and dimensions shown in the Drawings or proposed in the method statement/shop drawings of the Contractor and its approval by the Engineer. The works involve the cleaning/deepening of the waterways for temporary diverting to adjacent locations for provide working space for permanent structure (culverts) or waterway construction.

# **B.17.2 Materials Requirements**

Refer to:

- Excavation shall conform to the requirements of Item 103;
- Embankment shall conform to the requirements of Item 104;
- Pipe culverts, if planned, shall conform to the requirements of Item 500;
- Gabion, if planned, shall conform to the requirements of 511;
- Other materials as specified in the DPWH Standard Specifications (2013).

# **B.17.3** Construction Requirements

The Contractor shall verify the actual field situation of the waterway and creeks. The Contractor shall prepare waterway diversion plan in accordance with his method statement and shall submit to the Engineer for approval.

# **B.17.4 Measurement and Payment**

Temporarywaterway diversion shall not be measured and paid separately; its cost shall be deemed included in the rates and prices of the relevant items of work for the completion of the work.

# **PART C** Earthworks

## **PART C - EARTHWORKS**

# Item 100 – Clearing and Grubbing

### **100.1Description**

#### Section 100.1 is revised to read as follows:

This Item shall consist of the removal, hauling, and stockpiling of all materials including trees, stumps, roots, vegetation, logs, wastes, debris and protruding objects except those that are designated to remain in accordance with other items of these Specifications and where directed by the Engineer.

The holes resulting from clearing and grubbing operations, where directed by the Engineer, shall be filled with approved materials, which shall be placed and compacted to the maximum dry density. The work shall also include the preservation from injury or defacement of all objects designated to remain.

### **100.2**Construction Requirements

#### 100.2.1 General

#### Modify 2nd paragraph of Sub-Section 100.2.1 as follows:

The Engineer will establish the limits of work and designate all trees, shrubs, plants and other things to remain. The Contractor shall preserve all objects designated to remain. Paint required for cut or scarred surface of trees or shrubs selected for retention shall be an approved asphaltum base paint prepared especially for tree surgery.

Clearing shall be extended to one (1) meter beyond the toe of the fill slopes, or beyond rounding of cut slopes or outside edge of drainage facilities, unless otherwise shown on the Drawings or directed by the Engineer, with the exception of trees under the jurisdiction of the Forest Management Bureau and/or such tree and brush designated for preservation. Trees, shrubs or bushes designated to remain in place shall be carefully trimmed as directed by the Engineer and shall be protected from scarring, debarking and other injuries during construction operations.

Within the town or village areas, clearing and grubbing shall be strictly limited to the extent of cut and fill as shown in the Drawings or as designated by the Engineer. No private properties such as buildings, crops, signs, fences, and others shall be removed, relocated or altered without the written authorization from the Engineer.

Structures, properties and the likes which need to be removed but are still under legal expropriation proceedings shall in the meantime be preserved or excluded from the works, otherwise the Contractor shall be solely liable for any complaints or litigation filed by the owner of any damage to the structure and/or property as a result of his action. Any unauthorized interference and damage to private property shall be made good or restored by the Contractor to the satisfaction of the Engineer and the Owner.

# 100.2.2 Clearing and Grubbing

### Insert the following at the beginning of Sub-Section 100.2.2:

Prior to clearing and grubbing works, the following shall be made:

- 1) Upon the Commencement of Works, the Contractor shall conduct as-staked survey and submit as-staked survey results, as-staked survey drawings for approval of the Engineer.
- 2) The Contractor may be given possession of project site in accordance with the construction limits set forth.
- 3) After the as-staked survey, the Contractor shall submit to the Engineer for approval a "Topsoil Recovery Plan" that shall indicate:
  - the areas for stock piling of materials;
  - the locations where topsoil materials will be recovered; and
  - disposal method to be adapted.

#### Insert as item (6) of the 1<sup>st</sup> paragraph of Sub-section 100.2.2:

(6) Whenever areas where grading limits of cut and embankment is within the limits of clearing and grubbing, stripping of top soil shall be performed to a depth not more than 150 mm (6 inches).

#### Delete paragraphs 3, 4 and 5 of Sub-section 100.2.2 and replace with:

Burning of debris and other perishable material is not allowed.

#### Replace the first sentence of paragraph 6 of Sub-section 100.2.2 to read:

Materials, debris and perishable materials may be disposed of by methods and at locations approved by the Engineer, on or off the project.

## Add the following at the end of Sub-section 100.2.2:

Structures, properties and the likes which need to be removed but are still under legal expropriation proceedings shall in the meantime be preserved or excluded from the works, otherwise the Contractor shall be solely liable for any complaints or litigation filed by the owner on any damage to the structure and/or property as a result of his action.

Any unauthorized interference and damage to private property shall be made good or restored by the Contractor to the satisfaction of the Engineer and the Owner. Areas where trees are removed shall be repaired by filling the depressions including grub holes with approved fill materials and compacted as directed by the Engineer Filling shall not be paid separately but shall be considered part of the work under this item.

# 100.2.3 Individual Removal of Trees or Stumps

#### Add the following provisions to Sub-section 100.2.3:

The Employer will seek permission f cutting trees from the DENR and the Philippine Coconut Authority in case of coconuts trees prior to the Commencement of Works.

The Contractor, prior to any tree cutting/removal operation shall prepare inventory of the trees for the Engineer's approval. Trees to be cut shall be submitted in tabulated form, showing as much information for easy identification as follows:

- Station Limit
- Description/Name/Species of Trees
- Size/Diameter (in centimeter)
- Distance from the centerline of the road
- Location (Left/Right)

Trees cut shall be disposed of in a manner conforming to the requirements of Sub-Section 100.2.2 and with the requirements contained in the DENR permit. Individual trees intended to be removed and relocated, if any, shall be removed and relocated by the Contractor with care.

## **100.3Method of Measurement**

#### Add the following as Sub-section 100.3.4:

4. No measurement for payment shall be made for banana plants as tree but included in the clearing and grubbing.

Diameter at height of 1.4 m
Over 150 mm – 300 mm
301 mm – 500 mm
501 mm – 750 mm
751 mm – 900 mm
Above 900 mm

#### Modify the table in Section 100.3 with:

**100.4Basis of Payment** 

After the 1<sup>st</sup> paragraph insert the following amendments:

The payment for individual removal of trees is inclusive of the cost of transport to designated stock points or disposal area.

Payment will be made under:

Pay Item Number	Description	Unit of Measurement
100 (1)	Clearing and Grubbing	Hectare
100 (3) a1	Individual Removal of Trees 150-300mm dia.	Each
100 (3) a2	Individual Removal of Trees 301-500mm dia.	Each
100 (3) a3	Individual Removal of Trees 501-750mm dia.	Each
100 (3) a4	Individual Removal of Trees 751-900mm dia.	Each
100 (4)	Individual Removal of Trees, above 900mm dia.	Each
101(5)c2	Removal of Pipes other than Pipe Culverts, up to 200	Linear Meter
	mm diameter	

# Item 102 – Excavation

### **102.1Description**

#### Add the following paragraph to Sub-Section 102.1:

This Item shall consist of roadway drainage and borrow excavation, and the disposal of materials in accordance with this Specifications and in conformity with the lines, grades and dimension shown on the plans or establishes by the Engineer.

It shall be understood that the hauling of excavated fill material to stockpiles and areas of fill and the disposal of surplus and unsuitable materials to disposal sites is at any distance and therefore no overhaul will be paid.

## **102.1.1 Roadway Excavation**

#### Revise the entire text of Sub-Section 102.1.1 to read as follows:

Roadway excavation will include excavation and grading of roadways, intersections, approaches, slope rounding, benching, waterways and ditches; removal of unsuitable material from the roadbed and beneath the embankment areas; and excavating selected materials found in the roadway as ordered by the Engineer for specific use in the improvement. Roadway excavation will be classified as "unclassified excavation", "rock excavation", "common excavation", or "muck excavation" as indicated in the Bill of Quantities and hereinafter described.

1) <u>Common Excavation</u>. Common excavation shall consist of all excavation including any pavement layer of the existing roadway not covered by a separate item in the Bill of Quantities regardless of the nature of the materials excavated, other than borrow excavation, unsuitable excavation, and rock excavation.

Common excavation shall include excavation for the reshaping of side

ditches in accordance with the lines, levels and details shown on the drawings and as per instruction by the Engineer.

2) <u>Rock Excavation</u>. Rock excavation shall consist of excavation of igneous, sedimentary and metamorphic rocks which cannot be excavated without blasting or the use of rippers, and all boulders or detached stones each having a volume of 1 cubic meter or more as determined by physical measurements or visually by the Engineer.

Hard/solid rock excavation shall include all materials that cannot be ripped when worked with a tractor of at least 150 KW (200 Flywheel HP) fitted with a rear mounted heavy-duty hydraulic single ripper and requires either of the following:

- a. Requires drilling and blasting for its removal or,
- b. Requires the use of compressed air jack hammers for its removal.

Individual boulders greater than 1 cubic meter in volume shall be included in this class when the nature and size are such that in the opinion of the Engineer it cannot be removed without recourse to one of the above methods.

- 3) <u>Muck Excavation</u>. Muck excavation shall consist of removal and disposal of deposits of saturated or unsaturated mixtures of soils and organic matter such as muck, peat, organic silt, soil or sod, which is not suitable for foundation materials regardless of moisture content. This is sometimes considered as Unsuitable Excavation and will be for the opinion and approval of the Engineer.
- 4) <u>Unclassified Excavation</u>. Unclassified excavation shall consist of the excavation and disposal of all materials regardless of the nature, not classified and included in the Bill of Quantities under other pay items.

## **102.1.2 Borrow Excavation**

Borrow excavation shall consist of the excavation and utilization of approved materials required for the construction of embankments or for other portions of the work, and shall be obtained from approved sources, in accordance with Clause 61, Standard Specifications for Public Works and Highways, Volume 1 and the following;

(1) Borrow, Case 1

Borrow Case 1 will consist of material obtained from sources designated on the plans or in the Special Provisions.

(2) Borrow, Case 2

Borrow Case 2 will consist of material obtained from sources provided by the Contractor.

The material shall meet the quality requirements determined by the Engineer unless otherwise provided in the Contract.

Irrespective of the source of borrow materials whether as indicated in the Drawings, or as directed by the Engineer or from the Contractor's own source, it is understood that materials obtained from these sources are only of the desired quality passing the requirements of the Specifications. All preparatory works, problems of access and other related matters in connection with quarrying operations shall be the sole responsibility of the Contractor.

## **102.2**Construction Requirements

### 102.2.1 General

When there is evidence of discrepancies on the actual elevations and that shown on the Plans, a pre-construction survey referred to the datum plane used in the approved Plan shall be undertaken by the Contractor under the control of the Engineer to serve as the basis for the computation of the actual volume of the excavated materials.

All excavations shall be finished to reasonably smooth and uniform surfaces. No materials shall be wasted without the authority of the Engineer. Excavation operations shall be conducted so that material outside of the limits of slopes will not be disturbed. Prior to excavation, all necessary clearing and grubbing in that area shall have been performed in accordance with Item 100, Clearing and Grubbing.

## 102.2.2 Conservation of Topsoil

Suitable topsoil encountered in excavation and on areas where embankment is to be placed shall be removed to such extent and to such depth as directed by the Engineer. The removed topsoil shall be transported and stockpiled at locations approved by the Engineer. The topsoil shall be completely removed to the required depth from any designated area prior to the beginning of regular excavation or embankment work in the area and shall be kept separately from other excavated materials for later use.

## 102.2.3 Utilization of Excavated Materials

All suitable materials removed from the excavation shall be used in the formation of the embankment, subgrade, shoulders, slopes, bedding, and backfill for structures, and for other purposes shown on the Plans or as directed by the Engineer.

Only approved materials shall be used in the construction of embankments and backfills.

All excess materials, including rock and boulders that cannot be used in embankments shall be disposed of as directed by the Engineer.

Borrow Materials shall not be placed until after the readily accessible materials from roadway excavation has been placed in the fill, unless otherwise permitted or directed by the Engineer. If the Contractor places more borrow than is required and thereby causes waste of excavation, the amount of such waste will be deducted from the borrow volume.

#### **102.2.4 Prewatering**

Excavation areas and borrow pits maybe prewatered before excavating the material. When prewatering is used, the areas to be excavated shall be moistened to the full depth, from the surface to the bottom of the excavation. The water shall be controlled so that the excavated material will contain the proper moisture to permit compaction to the specified density with the use of standard compacting equipment.

The Contractor shall provide drilling equipment capable of suitably checking the moisture penetration to the full depth of the excavation.

#### **102.2.5 Presplitting**

Unless otherwise provided in the Contract, rock excavation, which requires drilling and shooting, shall be presplit.

Explosives maybe used only when authorized in writing by the Engineer, in accordance with the provisions of all laws, orders and regulations. The Engineer's approval on the use of explosives shall, in no case relieve the Contractor from any liability for claims caused by blasting operations.

The Contractor at all times shall, with the Engineer's permission, use materials containing hazardous substances with strict compliance to safety requirements and all manufacturer's warning, application instruction and specifications.

Regardless of the variance allowed in the formation of slope in rock excavations, only the volume within the limits indicated in the drawings, unless adjusted by the Engineer, shall be considered as pay quantity.

#### 102.2.6 Excavation of Ditches, Gutters, etc.

All materials excavated from side ditches and gutters, channel changes, irrigation ditches, inlet and outlet ditches, toe ditches, furrow ditches, and such other ditches as may be designated on the Plans or staked by the Engineer, shall be utilized as provided in Subsection 102.2.3.

Ditches and side ditches at cut sections, whether on rock or on common soil, shall conform to the slope, grade and shape of the required cross-section, with no projections of the roots, stumps, rock, or similar matter. The Contractor shall maintain and keep open and free from leaves, sticks and other debris all ditches dug by him until final acceptance of the work.

At sections of fill where the original ground and toe of slope of the designed road meet, and where the original ground slopes away from the intersection such that run off water does not accumulate and flow freely away from the roadbed, drainage ditch will not be necessary. However, if the ground slopes down towards the roadbed, the provisions of drainage ditches to convey runoff water away from the road will be necessary whether or not indicated on the drawings. Whenever the longitudinal gradient of drainage ditches constructed on common soil exceeds the maximum allowed by the drawings or when the conditions exist, which in the opinion of the Engineer, will result to damage of the roadbed through the action of erosion, the Contractor may be required to provide the corresponding protection. Erosion control protection whenever required shall be constructed in accordance to the relevant provisions of Part G- Drainage and Slope Protection Structures.

Structures to be constructed related to erosion control shall be measured and paid for in accordance with the relevant items in the Bill of Quantities under Part G: Drainage and Slope Protection Structures and Part H: Miscellaneous Structures of the Specifications, whichever is appropriate.

#### 102.2.7 Excavation of Roadbed Level

Rock shall be excavated to a depth of 150 mm below the subgrade within the limits of the roadbed, and the excavation be backfilled with material designated on the Plans or approved by the Engineer and compacted to the required density.

Materials below subgrade, other than rock shall be thoroughly scarified to a depth of 150 mm and the moisture content increased or reduced, as necessary, to bring the material throughout this 150mm layer to the moisture content suitable for maximum compaction. This layer shall then be compacted in accordance with Subsection 104.3.4 (Embankment-Compaction).

Tolerance for excavation shall be as follows:

- Cut Slopes in Soils shall be plus or minus one hundred millimeters (+/-100 mm)
- Cut Slopes in Soft Rock and Blasted Rock shall be plus or minus three hundred millimeters (+/- 300 mm)

#### 102.2.8 Borrow Areas

Material from borrow areas shall be used for the construction of embankment or for backfill only when suitable materials available from roadway excavation, structural excavation, excavation of ditches or waterways is of insufficient quantity. Permission to use material from borrow areas shall first be obtained from the Engineer. Nevertheless, the total volume of material from roadway excavation, ditch and watercourse excavations, and structure excavation less the materials declared unsuitable by the Engineer shall be considered available for use in the work regardless of haul distance.

In case borrow materials are needed in the formation of embankment, the Contractor may opt to use of the lahar materials from the surrounding areas. The use of lahar materials in the formation of embankment shall be limited only to the area contained by the lateral RCBC (Storm Drain) on both sides of the road and shall be subject to approval by the Engineer.

Surplus materials resulting from the Contractor's use of borrow materials, without first exhausting the available materials from roadway excavation shall not be measured for payment.

No borrow material shall be taken nearer than 30 meters from the toe of embankment or top of the cuts, unless called for in the widening of cuts or authorized by the Engineer. The distance from the work sites shall not be grounds for any claims for extra payment or revision of the contract price.

In addition, no borrow material shall be obtained from any area within two hundred (200) meters downstream of the drainage structure without the approval of the Engineer.

The Contractor shall notify the Engineer sufficiently in advance of opening any borrow area so that the cross-section elevations and measurements on the ground surface after stripping maybe taken, and the borrow material can be tested before being used. Sufficient time for testing the borrow material shall be allowed.

## **102.2.9Removal of Unsuitable Material**

#### Add the following paragraphs at the end of Sub-Section 102.2.9:

In general, whenever materials of doubtful characteristics are discovered during excavation and embankment construction, such materials shall be subjected to laboratory test at the option of the Engineer. If the test results show that the materials could be treated or blended to produce materials of the required quality for incorporation into the Works, the Contractor may perform such treatment or blending operations to the complete satisfaction of the Engineer. In all these cases, the Contractor, in electing to undertake the testing and treatment/blending operations, shall not be entitled to extension of time or additional compensation.

When unsuitable materials from excavation are to be disposed of outside the right-of-way, the Contractor shall first obtain a written permit from BCDA or the property owner /Claimant of the proposed disposal site. The Contractor shall submit to the Engineer the said permit or a certified copy thereof together with a written release of the property owner absolving the Employer from any and all the responsibilities in connection with the disposal of materials on his property. No disposal shall be done on the disposal site before the Engineer grants permission. Disposal of materials off the site as provided above shall be made in a neat and uniform manner to the satisfaction of the Engineer.

#### 102.2.10 Disposal Areas

#### Add the following paragraphs as 102.2.10:

Unless otherwise directed by the Engineer, unsuitable and surplus excavated materials shall be transported and disposed in disposal areas approved by the Engineer consistent with the stipulations of Part B – Other General Requirements, B.14.7 Waste Disposal.

### **102.4Basis of Payment**

#### Insert after the 1st paragraph of Sub-section 102.4 Basis for Payment:

The volume produced by the 150 mm removal of top soil is subsidiary to clearing and grubbing and must be deducted from the volume of the roadway excavation.

#### and amend 102.4 with the following:

Payment will be made under:

Pay Item Number	Description	Unit of Measurement
102(1)	Unsuitable Excavation	Cubic Meter
102(2)	Surplus Common Excavation	Cubic Meter
102(3) b	Surplus Rock Excavation, Hard	Cubic Meter

## Item 103 – Structure Excavation

### **103.1Description**

### Add the following paragraphs to Section 103.1:

Structure excavation shall be done mechanically or manually and shall proceed until ten (10) centimeters (minimum) higher than the abutment and pier footing designed bottom elevation. The final excavation and trimming shall be done manually to conform to the level and lines indicated in the drawings. The bottom of the excavation works shall be free from irregular mounds or any foreign materials.

Structure excavation shall be limited to the excavation for bridges, box culverts, revetments, retaining walls, headwalls, wing walls, catch basins, manholes, drop inlets, and other structures for the whole or part of the structure as shown on the drawings. The work shall consist of excavation in earth or rock within the limits of the work as specified or as shown on the drawings and backfilling of these structures with suitable material. The work shall also include disposal of surplus materials, all necessary draining, pumping (dewatering). bailing, sheeting. shoring. the construction of cribs and cofferdams and their subsequent removal, and the removal of existing structures or parts thereof that obstruct or encroach upon the structural excavation.

#### (CCLEX)

Excavation for structures shall not be classified for measurement and payment as "Structure Excavation Above Ordinary Water Level (OWL)" and "Structure Excavation Below Ordinary Water Level" as the case may be. The water elevations shown on the Drawings are approximate only and any variation in elevation found during construction shall not be used as a basis for extra compensation for this Item.

## Delete the last paragraph of Section 103.1 and replace with:

Structure Excavation shall be classified as Common Excavation and Rock Excavation. Rock Excavation shall consist of hard material in masses (including individual rock boulders exceeding 1.0 m<sup>3</sup> in volume) which in the opinion of the Engineer cannot be excavated without blasting or the use of hydraulic breaker mounted to hydraulic excavator of at least 120 Kw, or

the use of compressed air drilling for their removal, and that cannot be extracted by ripping with a tractor of at least 200 Kw with a single, rearmounted, heavy-duty ripper.

# **103.2** Construction Requirements

## **103.2.1** Clearing and Grubbing

Prior to starting excavation operations in any area, all necessary clearing and grubbing in that's area shall have been performed in accordance with Item 100. Clearing and Grubbing.

# 103.2.2 Excavation

Generally, in all structures, the Contractor shall notify the Engineer sufficiently in advance of the beginning of any excavation so that crosssectional elevations and measurements may be taken on the undisturbed ground. The natural ground adjacent to the structure shall not be disturbed without permission of the Engineer.

Any excavation carried beyond the limits and dimensions as shown or described on the Drawings or Specifications shall be backfilled with acceptable materials.

Trenches or foundation pits for structures or structure footings shall be excavated to the lines and grades or elevation shown on the Plans or as staked by the Engineer. They shall be of sufficient size to permit the placing of structures or structure footings of the full width and length as shown on the Plans. The elevations of the bottoms of footings, as shown on the Plans, shall be considered as approximate only and the Engineer may order, in writing, such changes in dimensions or elevations of footings as maybe deemed necessary, to secure a satisfactory foundation.

If excess excavation occur which resulted to a greater depth or width than is necessary, then the Contractor shall at his own expense backfill the excess excavation with approved materials, compacted to the density of the adjacent ground, to the correct levels and dimensions to the approval of the Engineer.

When instructed by the Engineer, the Contractor shall carefully set aside the various materials encountered so that they may be replaced in their original position

Trenches shall be kept clean and free from water during excavation, concreting, laying of pipes and backfilling. In cases where presence of water is unavoidable during excavation and prior the laying of pipes, the Contractor shall dig diversion channels, erect cofferdams or otherwise dewater the trench to ensure proper procedure and compaction before concreting or laying of pipes.

Where, in the opinion of the Engineer, any invert has become soft or unsuitable to receive the culvert or concrete bed due to the Contractor's method of working, the Contractor shall at his own expense remove and replace the material with non-structural concrete or other approved material as instructed by the Engineer. Where concrete is specified, the mix shall consist of ordinary portland cement and aggregate, both complying with the Specifications Item 405. The weight of cement mixed with 0.3m<sup>3</sup> of
aggregate shall not be less than 50 kg. The quantity of water shall not exceed that required to produce a smooth cement paste, which coat evenly the whole of the aggregate.

Where rock, hardpan, or other unyielding material is encountered, it shall be removed below the foundation grade for a depth of at least 300mm or 4mm for each 100mm of fill over the top of pipe, whichever is greater, but not to exceed three-quarters of the vertical inside diameter of the pipe. The width of the excavation shall be at least 300mm greater than the horizontal outside diameter of the pipe. The excavation below grade shall be backfilled with selected fine compressible material, such as silty clay or loam, and lightly compacted in layers not over 150mm in uncompacted depth to form a uniform but yielding foundation.

For culverts which are to be constructed under a "trenched" or "negative projection" conditions, where the pipes are laid in a trench excavated below existing ground level or in a trench excavated in a previously constructed embankment, the top 150mm in the trench invert shall be compacted to a dry density of at least 95% MDD (AASHTO T99) or at least the same density as the adjacent ground, whichever is the greater, unless otherwise specified.

Where culverts are to be laid under the "embankment" or "positive projection" conditions, the Contractor shall level the existing ground by excavating and backfilling. The Contractor shall then compact the ground for 150 mm below invert or underside of bedding material to a dry density of 95% MDD (AASHTO T99) or to the density of the adjacent ground, whichever is the greater, such that the foundation of the culvert of bedding is true to grade and of uniform density over the whole length of the culvert.

The Engineer's approval is required before placing concrete in all excavations for structures made through water bearing strata that require dewatering.

Any excavation carried beyond the limits shown or described on the Drawings or Specifications or beyond the dimension resulting from adjustments made by the Engineer shall be backfilled with materials acceptable and as directed by the Engineer.

# **103.2.3 Utilization of Excavated Materials**

All suitable excavated materials shall be utilized as backfill or embankment. The surplus materials shall be disposed of in such manner as not to obstruct the stream or otherwise impair the efficiency or appearance of the structure. No excavated materials shall be deposited at any time so as not to endanger the partly finished structure.

#### 103.2.4 Cofferdams

#### Add paragraph to this sub-section:

The Contractor shall submit drawings showing the method of the temporary works as support and/or protection to facilitate excavation under critical situations such as the presence of water or other natural occurrences threatening the stability of the permanent works.

Suitable and practically watertight cofferdams shall be used wherever water-bearing strata are encountered above the elevation of the bottom of the excavation. The Contractor shall submit the drawings showing his proposed method of cofferdam construction, as directed by the Engineer.

# **103.2.5 Preservation of Channel**

Unless otherwise permitted, no excavation shall be made outside of caissons, cribs, cofferdams, or sheet piling and the natural stream bed adjacent to structure shall not be disturbed without the permission from the Engineer. If any excavation or dredging is made at the side of the structure before the caissons, cribs, or cofferdams are sunk in place, the Contractor shall, after the foundation base is in place, backfill all such excavations to the original ground surface or stream bed with material satisfactory to the Engineer.

# 103.2.6 Backfill and Embankment for Structures Other than Pipe Culverts

# *Replace the 1<sup>st</sup> paragraph of 103.26 with the following:*

Excavated areas around structures shall be backfilled with materials meeting the hereunder gradation and placed in horizontal layers not over 150 mm in thickness, to the final level. Each layer shall be moistened or dried as required and thoroughly compacted with mechanical tampers.

Sieve Size (ASTM E11)	Percent Passing
75 mm (3")	100
9.5 mm (3/8")	55-100
4.75 mm (No.4)	35-85
0.60 mm (No.30)	20-50
0.075 mm (No.200)	0-15

The Engineer may instructother gradation from the roadway or structural excavation of which PI is less than 12 or other appropriate PIs.

#### 103.2.7 Bedding, Backfill, and Embankment for Pipe Culverts

Bedding, Backfill and Embankment for Pipe Culverts shall be done in accordance with Item 500, Pipe Culverts and Storm Drains.

#### 103.2.8 Shoring, Cribbing, and Related Work

Shoring, cribbing, and related protective works if required in the construction shall not be measured and paid for separately and shall be considered subsidiary to the item for which they are constructed and utilized.

#### 103.3.3 Foundation Fill

Add the following paragraph at the end of this Sub-Section:

If shown in the Plans as Foundation Fill, such materials are those meeting the requirements of Item 200-Aggregate Subbase Course.

# 103.3.4 Shoring, Cribbing and Related Work

## Delete the 1<sup>st</sup> sentence of 103.3.4 and replace with:

Shoring, cribbing, and related protective works if required in the construction shall not be measured and paid for separately but shall be considered subsidiary to the item for which they are constructed and utilized.

#### 103.3.5 Basis of Payment

#### Modify 103.3.5 to read:

The accepted quantities, measured as prescribed in Section 103.3 shall be paid for at the contract unit price for each of the particular pay items listed below that is included in the BOQ. The payment shall be the full compensation for the work item including the cost of labor, equipment, tools and incidentals necessary to complete the work including backfill, shoring and cribbing, protective works, removing and disposing unsuitable materials and removal and hauling of excess suitable materials to stockpile as directed by the Engineer.

Payment will be made under:

Pay Item Number	Description	Unit of Measurement
103(1)a	Structure Excavation, Common Soil	Cubic Meter
103(1)c	Structure Excavation, Hard Rock	Cubic Meter
103(3)	Foundation Fill	Cubic Meter
103(6)a	Pipe Culverts and Drain Excavation, Common Soil	Cubic Meter

#### Item 104 - Embankment

104.2Material Requirements

Add the following paragraph and modify Item (1), then change the number of Item (2) to (3) of Section 104.2 as follows:

Embankment shall be constructed of suitable materials in accordance with the following definition:

1) Suitable Material

Materials which is acceptable in accordance with the contract and which can be compacted in the manner specified in this Item. It can be common material or rock provided however, it shall have a CBR value of not less than seven (3%) percent when tested according to AASHTO 193-81 after four days soaking when compacted to 95% of the maximum dry density according to AASHTO T-99-90.

2) Selected Borrow

Selected borrow shall be of such gradation that all particles will pass a sieve with 75 mm (3 inches) square openings and not more than 15 mass percent will pass the 0.075 mm (No. 200) sieve, as determined by AASHTO T 11. The material shall have a plasticity index ranging from 6% -11% as determined by AASHTO T 90, a liquid limit of not more than 35 % as determined by AASHTO T 89.

#### Add the following item at the end of the Sub-Section 104.2:

3) Non-Treated Lahar Material

Excavated materials from approved lahar borrow pits formed and compacted in its natural state.

4) Selected Granular Embankment

In situations where placing and/or compaction under saturated or flooded conditions cannot be avoided, selected granular embankment shall be river run gravely sand or gravel or other clean granular materials as shown and specified on the drawing or as directed and approved by the Engineer.

- 104.3 Construction Requirements
- 104.3.1 General

#### Add the following paragraph at the end of Sub-Section 104.3.1

Prior to the construction of embankment, the Contractor shall submit for review and approval the methodology he intends to apply for the formation of embankment satisfying all requirements in conformity with the lines, grades and dimensions shown in the plans. The methodology shall show the systematic procedure of constructing the embankment in conjunction with the procedure proposed for the slope protection as shown in the drawings.

The approval of the proposed methodology however does not relieve the Contractor of the responsibilities for any unsatisfactory or defective works as results of such methodology. The Engineer at his discretion may reject or require remedial measures to the defective works. The cost of replacing or remedying defective works shall be borne by the Contractor.

Before embankment construction is started, the Contractor shall construct in accordance with his methodology, a section of trial embankment in accordance with Sub-section 104.3.10, Trial Embankment

104.3.2 Method of Construction

#### Add the following paragraph to Sub-Section 104.3.2 to read as follows:

In places where the road embankment will be constructed over the existing gravel or dirt road, as shown in the plan or as directed by the Engineer, the

surface of the existing road shall be ripped to a depth of 150 mm. Then the existing road shall be reshaped and compacted to the same or greater density as the materials to be placed thereon, to provide a uniform foundation for the embankment materials to follow.

In places where lahar materials will be used in the formation of embankment, it shall be limited only to the area contained by the lateral RCBC (Storm Drain) on both sides of the road and shall be subject to approval by the Engineer.

#### 104.3.3 Compaction

# Modify the first paragraph of text under the heading "Earth" of Sub-Section 104.3.3 to read as follows:

Each layer of embankment, except layers consisting of rock shall be moistened or dried to uniform moisture content within 2% of the optimum moisture content, then thoroughly compacted to the following densities:

- 95% of maximum density as determined by AASHTO T 99, for all the embankment, except the top 300 mm (subgrade).
- 98% of the maximum density as determined by AASHTO T 180 for the top 300 mm (subgrade) of the embankment.

# Modify last sentence under the heading "rock" of Sub-Section 104.3.3 is amended to read as follows:

The embankment shall be compacted with compaction equipment over the full width and in a longitudinal direction until there is no visible movement of the rock fill materials when under the compacting equipment

#### Add the following paragraph after the last paragraph of Sub-Section 104.3.3:

Placing of fill will be suspended if, in the opinion of the Engineer, there is no adequate compaction and grading equipment available on site in operating condition to shape and compact the fill immediately upon placement.

#### Add the following Sub-Sections to Section 104.3

104.3.10 Trial Embankment

#### The following requirements shall be considered to supplement and modify the requirements of "Compaction Trials" of Sub-section 104.3.3

#### 1)General

Before starting the embankment works, the Contractor shall carry out trial embankments and tests to demonstrate to the Engineer the performance of its equipment and to determine the effectiveness of the proposed construction method especially the blending, placing, spreading and compaction. All findings obtained from the trial embankments and tests shall be submitted to the Engineer for establishing desirable criteria for the quality control of the embankment works. The Contractor shall make joint efforts with the Engineer until acceptable criteria and methodology are established.

The Contractor shall submit to the Engineer for approval his plan and schedule for the construction of the trial embankment including location and area of embankment, type and quality of equipment, manner of blending, placing, spreading and compaction, items and quantity of test, and other information for the trial embankment.

No separate payment shall be made of the trial embankment; all the cost thereof is deemed to be included in the payment specified in this work item.

2) Execution of Trial Embankment

The trial embankment shall be carried out simulating normal construction conditions by using all the equipment and methods proposed for placing, spreading and compaction the embankment materials.

The trial embankment shall be carried out at a minimum of four (4) independent sites, and the section of each trial embankment shall be constructed to the full width of the embankment over a 30m length and to a height of 0.6 m at least after compaction. Each trial embankment section shall be tested by various kind of compaction equipment.

Spreading depth of the trial embankment shall be not more than 20 cm after compaction.

The number of passes shall be varied to provide at least four (4) cases to establish a relation between number of passes and degree of compaction.

Several kinds of material, which can cover representative soil characteristics of the whole embankment materials, shall be tested. Should clearly different materials be used for a section of embankment, such materials shall also be tested in the same manner.

# 3)Soil Test and Measurement

All materials of embankment shall be conditioned beforehand and tested in accordance with Clause 104.2 of this Specification. The Contractor shall carry out, as a minimum, the following tests during the operation of the trial embankment:

a) Settlement measurement of layer.

Settlement of layer shall be measured after compaction at a minimum of nine (9) points per each trial in each site using a taut line horizontally strung between the batter boards at both ends of embankment.

 b) Measurement of in-place density and moisture content in accordance with Sub-Section 104.3.12 of this Specification. Measurement shall be made at a minimum of nine (9) points per each trial in each site.

# 4)Establishment of Criteria

The Contractor shall investigate results of the trial embankment and shall submit to the Engineer for approval his proposed method and manner of embankment operation which shall include full height construction of embankment, spreading depth, number of passes, type of equipment, combination of equipment, construction of slope protection, and other information necessary for establishing the criteria of embankment operation.

If acceptable criteria are not established, the Contractor shall repeat the trial embankment to the satisfaction of the Engineer.

# 104.3.11 Embankment Operation

# 1)General

This Sub-Section shall cover the manner of embankment construction, no separate payment shall be made for the requirements of this Sub-Section, and all the costs except surface preparation are deemed included in the payment specified in this work Item.

Costs of the surface preparation stated in the succeeding paragraph are deemed included in the related items of payment such as clearing and grubbing.

# 2) Operation of Borrow Pit

Borrow pits shall be cleared and grubbed as directed by the Engineer to remove all unsuitable materials. The Contractor shall, at his own expense secure the necessary right-of-way and access thereto. The Contractor shall bear all royalty fees imposed by the owner and municipalities where these borrow areas are situated. The Contractor shall construct and maintain the haul roads, together with the necessary right-of-way for such roads and right of access thereto.

Borrow pits where practicable shall be excavated to drain it to the nearest natural outlet or to such outlet as directed by the Engineer. The surface of the borrow pits shall be left in a reasonably smooth and even condition and then stripped top soil, if any, shall be returned and spread to the satisfaction of the Engineer before abandoning such borrow pit areas. Planting trees and grass of the leveled area may also be required from the Contractor before abandoning the borrow pit as directed by the Engineer.

3)Surface Preparation

Ground surface to be covered with embankment materials shall be prepared as follows:

- a) Clearing and grubbing shall be executed in accordance with the requirements specified in Item 100 of these Specifications.
- b) Stump holes or other small excavations in the limits of embankment shall be filled with embankment materials and thoroughly tamped by approved methods before commencing the embankment operation.
- c) The embankment operation shall be performed always in the dry condition. Springs and seepage along the foundation, if any, shall be treated by the method approved by the Engineer.
- d) Prior to placing any fill upon the area, all clearing and grubbing operations and stripping of top soil, where required, shall have been completed.
- e) Where shown on the Drawings or ordered by the Engineer, the surface of the existing ground shall be compacted to the depth of 150 mm and in accordance with the requirements of Sub-section 104.3.3.

4)Excavation, Transportation and Stockpile

The Contractor shall excavate embankment materials at approved borrow pit, or at the stockpiles when the materials are stockpiled under the scope of the excavation works specified in Item 102, Excavation.

The material suitable for the embankment which is too wet for immediate compaction shall be placed temporarily to the stockyard and aerated until the moisture content is sufficiently reduced to permit them for the embankment operation.

5)Placing, Spreading and Compaction

Placing spreading and compaction of embankment materials shall be executed in the manner of the approved criteria of embankment operation established through the trial embankment. Materials shall be placed and spread so that no single layer exceeds 200 mm in thickness after compaction. As far as practicable, the material shall be dried or wetted to have proper moisture content within the allowable range determined through the regular compaction test.

Equipment for placing, spreading and compaction shall be as specified in the approved criteria of embankment operation. No other equipment shall be used without the approval of the Engineer.

Degree of compaction shall be as specified in Sub-Section

104.3.3. When any layer fails to comply with the specified degree of compaction, the Contractor shall immediately recompact, wet or dry, improve or replace the materials. All soft or yielding areas that may develop in the embankment shall be corrected by re-compaction, by removing the unsuitable materials and replacing them immediately upon order of the Engineer.

When the results of embankment monitoring show the possibility of slope or embankment failure, the Contractor shall take immediate action such as tentative removal of a part of embankment, tentative counterweight fill, or any other measures, which the Contractor deems necessary. The Contractor shall in this case, notify the Engineer of such possibility and the measures being promptly taken by the Contractor to the extent possible.

6)Tolerance

The completed embankment section shall have elevation and dimensions which fall within the following tolerances.

Elevation/DimensionTolerance (mm)

Crest Elevation of Embankment $\pm$  50 Crest Width of Embankment $\pm$  100 Length of Embankment Slope $\pm$  200

104.3.12 Quality Control of Embankment Operation

#### 1. General

Quality control of the embankment operation shall be carried out through the regular compaction test and the daily control test as specified hereinafter.

No separate payment shall be made for the requirements of this Sub-Section and all the costs thereof are deemed included in the payment specified in this work Item.

2. Regular Compaction Test

The regular compaction test shall be carried out once every 20,000 m3 of the materials and before a new source of material is placed in the works. Measurement of natural moisture content and specific gravity of soils and determination of the optimum moisture content and the maximum dry density shall be made and results shall be submitted to the Engineer for approval.

3. Daily Quality Control Test

a. General

Daily quality control test shall be executed at embankment sites by use of the radioisotope type soil density and moisture gauge (RI gauge) which shall be procured by the Contractor.

The Contractor shall measure in-place dry density and in-place moisture content using the RI gauge on daily basis when the embankment operation is executed.

b. Execution of Daily Quality Control Test

Measurement of in-place dry density and in-place moisture content shall be made daily at the rate of one (1) point measurement per 500 square meter area of each layer of compacted fill.

All measurement data shall be recorded and filed with direct output from the RI gauge. Record format shall contain, but not limited to, the following items:

- Date and time of measurement
- Weather condition
- Rainfall
- Location of Embankment
- Location of Measurement
- Approximate work volume of embankment
- Type of embankment material.
- Moisture content at borrow pit or stockyard
- In-place moisture content at embankment site
- In-place density of embankment material
- Degree of compaction
- Presence of the Engineer

The Contractor shall plot the data in a form of daily control graph and shall monitor its daily change. The Contractor shall submit all the test results of daily quality control test to the Engineer once every week for approval. The Contractor, when requested by the Engineer, shall measure in-place density of the soils by the sand replacement method.

104.3.13 Monitoring of Embankment

The settlement and stability of the major embankment shall be monitored by the Contractor periodically in accordance with Item 109.

104.4Method of Measurement

# Add the following paragraph after the last paragraph of Sub-Section 104.4:

Any material coming from roadway, structure, drainage or ditch excavations which are suitable for use but are replaced by the Contractor with borrow materials without prior approval by the Engineer, shall not be measured for payment. Measurement of quantities for embankment shall be made by the volume of embankment materials placed and compacted to the lines, grades, and dimensions shown on the drawings or directed by the Engineer and shall be taken only in the presence of the Engineer. The Engineer shall be notified at least 24 hours before taking such measurement. The volume of embankment materials shall be computed by end area method and determined from the execution section of the embankment established on the original ground line after stripping. The original ground line shall be surveyed and reported to the Engineer for checking and approval to the execution of the embankment operation.

The quantity of Embankment from Borrow shall be measured as the balance between the total embankment volume (as shown on the drawings) and the total volume of suitable material from roadway excavation, from excess structure, pipe culvert and drainage excavations and from excess realignment of river channel excavation.

#### 104.5Basis of Payment

# Modify the text of Section 104.5 to read as follows:

The accepted quantities, measured as prescribed in Section 104.4, shall be paid for at the Contract unit price for each of the Pay Items listed below that is included in the Bill of Quantities. The payment for accepted quantities for embankment with fill materials from roadway and borrow excavation shall be deemed to include the cost of excavation, royalties, hauling, blending, drying and wetting if necessary, placing, spreading and compaction of fill materials. The payment for accepted quantities for embankment construction with fill materials from realignment of river channel and structure excavation shall be deemed to include the cost of hauling from stockpiles, blending, drying and wetting if necessary, placing, and spreading and compaction of fill materials. The payment shall be full compensation for the furnishing, placing and compacting of all materials, including all labor, equipment, tools and incidentals necessary to complete the work prescribed in this Item.

The unit price shall also include the costs for procurement and furnishing of required materials if not coming from approved excavation. No separate payment shall be made for the tentative removal of embankment, counterweight fill, placing and removal of surcharge and preload and secondary excavation and backfilling for structures to be constructed on the embankment, cost of which shall be deemed included in the unit price of the embankment.

Payment will be made under:

Pay Item	Description	Unit of
Number	Description	Measurement
104 (1)a	Embankment from Roadway	Cubic Meter
	Excavation, Common Soil	
104 (1)c	Embankment from Roadway	Cubic Meter
	Excavation, Hard Rock	

104(2)a	Embankment from Borrow	Cubic Meter
	Excavation, Common Soil	

# **Item 105 – Subgrade Preparation**

#### **105.1 Description**

This item shall consist of the preparation of the subgrade for the support of overlying structural layers. It shall extend to full width of the roadway. Unless authorized by the Engineer, subgrade preparation shall not be done unless the Contractor is able to start immediately the construction of the pavement structure.

#### **105.2 Material Requirements**

Unless otherwise stated in the Contract and except when the subgrade is in rock cut, all materials below subgrade level to a depth of 150mm or to such greater depth as may be specified shall meet the requirements of Section 104.2-Materials Requirement for Embankment

#### **105.3 Construction Requirements**

# 105.3.1 Prior Works

Prior to commencing preparation of the subgrade, all culverts, cross drains, ducts and the like (including their fully compacted backfill), ditches, drains and drainage outlets shall be completed. Any work on the preparation of the subgrade shall not be started unless prior work herein described shall have been approved by the Engineer.

#### 105.3.2 Subgrade Level Tolerances

The finished compacted surface of the subgrade shall conform to the allowable tolerances as specified hereunder:

Permitted variation from + 20 mm design LEVEL OF SURFACE - 30 mm

Permitted SURFACE IRREGULARITY MEASURED BY 4-m STRAIGHT EDGE 30 mm

Permitted variation from design CROSSFALL OR CAMBER  $\pm 0.5\%$ 

Permitted variation from design LONGITUDINAL GRADE  $\pm$  0.1% over 25 m length

### 105.3.3Subgrade in Common Excavation

#### Add to this item the following:

a) Common excavation is considered to occur where the designed subgrade level cuts into the original ground and in earth cuts where the proposed road centerline deviates from the existing centerline wholly or in part of the existing roadway width.

- b) All material within 15 centimeters below subgrade level, when molded at the optimum moisture content, as determined by AASHTO T99 and at 95 percent of the maximum dry density, as determined by AASHTO T180, shall have the soaked CBR value of 7% in cut and 7% in fill sections.
- c) The roadbed material in cut shall be moistened or dried to a uniform moisture content within + or -2% of optimum moisture and then thoroughly compacted to 95% of the maximum density as determined by AASHTO T180 in case the roadbed will constitute the subgrade of the new pavement.

# 105.3.4 Subgrade in Rock Excavation

Surface irregularities under the subgrade level remaining after trimming of the rock excavation shall be leveled by placing specified material and compacted to the requirements of Subsection 104.3.3.

# 105.3.5 Subgrade on Embankment

After the embankment has been completed, the full width shall be conditioned by removing any soft or other unstable material that will not compacted properly. The resulting areas and all other low sections, holes be or depressions shall be brought to grade with suitable material. The entire roadbed shall be shaped and compacted to the requirements of Subsection 104.3.3. Scarifying, blading, dragging, rolling or other method of work shall be performed or used as necessary to provide a thoroughly compacted roadbed shaped to the cross-sections shown on the Plans.

#### 105.3.6 Protection of Completed Work

The Contractor shall be required to protect and maintain at his own expense the entire work within the limits of his Contract in good condition satisfactory to the Engineer from the time he first started work until all work shall have been completed. Maintenance shall include repairing and recompacting ruts, ridges, soft spots and deteriorated sections of the subgrade caused by the traffic of the Contractor's vehicle/equipment or that of the public.

#### **105.3.7 Templates and Straightedges**

The Contractor shall provide for use of the Engineer, approved templates and straightedges in sufficient number to check the accuracy of the work, as provided in this Specification.

# **105.4Method of Measurement**

# 105.4.1Measurement of Items for payment shall be provided only for:

Insert the words "at or" between "ground" and "below" in paragraph (1).

Add the following paragraphs to Sub-Section 105.4.1:

- 3. The preparation of the subgrade at locations where unsuitable materials have been excavated shall be measured in square meters, which shall be calculated based on surveys carried out defining the limits as directed by the Employer's Representative.
- 4. Should a leveling course be necessary to correct the irregularities of the prepared subgrade or for non-compliance to the maximum allowable tolerances prescribed in Section 105.3.2 such course shall not be measured separately and shall be deemed to have been included in the pay item for embankment.
- 5. Subgrade preparation shall be measured for cut sections only, no measurement shall be made on embankment sections wherein the work shall be considered subsidiary to the embankment.

# **105.5Basis of Payment**

Payment will be made under:

Description	Unit of Measurement
Subgrade Preparation, Common Material	Square Meter
	Description Subgrade Preparation, Common Material (For Cut Section Only)

# **PART D** Sub-base and Base Course

# PART D - SUBBASE AND BASE COURSE

# Item 200 – Aggregate Subbase Course

#### 200.1 Description

This item shall consist of furnishing, placing and compacting an aggregate subbase course on a prepared subgrade in accordance with this Specification and the lines, grades and cross-sections shown on the plans, or as directed by the Engineer.

# **200.2 Material Requirements**

#### Add the following Provisions to Sub-Section 200.2:

If fillers, in addition to that naturally present in the aggregate subbase materials are necessary for meeting the grading requirements and/or for satisfactory bonding of material, it shall be uniformly blended with the subbase course materials at the stockyards. The materials for such purpose shall be obtained from sources that can supply materials passing the specification requirements. It shall be free from hard lumps and shall not contain more than 15 % of material retained on the No. 4 sieve.

# **200.3.3** Construction Requirements

#### Add the following paragraph at the end of Sub-section 200.3.3:

Base paver, heavy-duty asphalt finisher, preferably for full width (2-lanes) may be used for laying the sub-base for the carriageway PCCP to minimize segregation of materials and ensure flatness. Thickness of 200 mm when spreading and compacting using a base paver (heavy duty asphalt finisher) will be allowed.

# **200.4Method of Measurement**

#### Add the following paragraph at the end of this subsection 200.4:

No separate measurement of filler for blending shall be made. Any work necessary to provide a subbase material conforming to the specified gradation and quality shall be considered incidental.

#### 200.5Basis of Payment

Payment will be made under:

Pay Item Number	Description	Unit of Measurement
200(1)	Aggregate Subbase Course	Cubic Meter

# PART E

**Surface Courses** 

# **PART E - SURFACE COURSES**

# Item 311 - Portland Cement Concrete Pavement

#### **311.1 Description**

This Item shall consist of pavement of Portland Cement Concrete, with or without reinforcement, constructed on the prepared base in accordance with this Specification and in conformity with lines, grades, thickness and typical cross section shown on the Plans.

#### **311.3**Construction Requirements

# 311.3.2 Equipment

# Insert the following paragraphs after the 1<sup>st</sup> paragraph of 311.3.2:

The Contractor shall establish his own concrete batch plant (wet mix) and shall submit concrete production plan, schedule, capacity and specifications of the plant for prior approval of the Engineer. The plant shall be subject to calibration for accreditation.

# 311.3.2.3 Paving and Finishing Equipment

# Insert the following paragraphs at the end of 311.3.2.3:

The Contractor's method statement for PCCP construction including the capacity and specifications of the equipment shall be subject to approval by the Engineer.

## 311.3.3.8 Limitation of Mixing

# Insert the following paragraph after the 2<sup>nd</sup> paragraph:

Concrete temperature shall be controlled within the specified limit. The Contractor shall cool down water to be used for mixing concrete by ice-blocks or other appropriate methods approved by the Engineer.

# 311.3.12.3 Traverse Contraction Joints/Weakened Joint and

# 311.3.12.5 Load Transfer Devise

Insert the following paragraphs at the start of subsections 311.3.12.3 and 311.3.12.5:

Dowel bars for 4.5m traverse construction joints/weakened plane joints shall be installed for the carriageway pavement, as shown in the Drawings. The Contractor shall submit a method statement for this work for approval by the Engineer. *Add the following paragraphs to 311.3.14* 

As soon as the concrete has been placed and floated, the pavement surface shall be tested with a 4-m straight-edge or other specified device. Areas showing high spots shall be immediately floated down such that the area or spot will not show surface deviations when tested with 4 m

straight-edge. Areas showing low spots shall be added with fresh concrete and floated to meet the adjacent pavement level such that the area will not show surface deviations when tested with 4 m straight-edge.

Hardened concrete where the departure from correct cross-section exceeds 12 mm, the pavement shall be removed and replaced by and at the expense of the Contractor.

Any area or section so removed shall be not less than 1.5 m in length and not less than the full width of the lane involved. When it is necessary to remove and replace a section of pavement, any remaining portion of the slab adjacent to the joints that is less than 1.5 m in length, shall also be removed and replaced.

# **311.4Method of Measurement**

# Add the following paragraphs to 311.4:

Dowel bars and other reinforcements installed at joints shall not be measured separately but shall be deemed included in the contract unit price of PCCP in the BOQ.

# **311.5Basis of Payment**

# Modify sub-Section 311.5 to read as follows:

Payment will be made under:

Pay Item Number	Description	Unit of Measurement
300(1)	Gravel Surface Course	Cubic Meter
311(1)f1	Portland Cement Concrete Pavement (Unreinforced) 0.30 m thick, 14 days	Square Meter

# PART F

# **Bridge Construction**

(Reinforced Concrete Box Culverts)

# **PART F – BRIDGE CONSTRUCTION**

# Item 404 – Reinforcing Steel

## **404.2Material Requirements**

All Reinforcing Steel shall be Grade 60 for diameter 16 mm and above and Grade 40 for diameter below 16 mm.

# **404.3**Construction Requirements

# 404.3.4 Placing and Fastening

# Add the following at the end of the first paragraph:

Splices shall not be paid and its cost shall be considered as part of the contract unit price for reinforcing steel.

# Add the following at the end of this clause:

Reinforcement shall be firmly and securely held in position by tying at intersections with No.16-gauge soft iron wire with the ends of the wire turned towards the main body of the concrete.

#### 404.3.5 Splicing

#### Add the following at the end of this clause:

The use of mechanical coupler as a splice alternative shall be considered.

#### Add the following as Sub-section 404.3.7:

#### 404.3.7 Welding

Welding shall be done by the manual shielded metal-arc process. Low Hydrogen electrodes conforming to the requirements of AWSA 5.1 for E7016 or E7018 electrodes shall be used.

Before any electrodes are used, the Contractor, at the Contractor's expense, shall furnish certified copies of test reports for all the pertinent tests specified in AWS A5.1 made on electrodes of the same class, brand and nearest specified size as the electrode used. The tests may have been made for process qualification or quality control, and shall have been made within one year prior to manufacture of the electrodes and fluxes to be used. The report shall include the manufacturer's certification that the process and material requirements were the same for manufacturing the tested electrodes to be used. The forms and certificates shall be as directed by the Employer's Representative. Electrodes shall be purchased in hermetically sealed containers or dried for 2 hours and

230°C to 260°C before use. Immediately after removal from hermetically sealed containers or from frying ovens, the electrodes shall be stored in ovens held at a

temperature of at least 120°C. Electrodes not used within 4 hours after removal from hermetically sealed containers or the drying or storage ovens shall be re-dried before use.

Completed welded splices shall develop a minimum tensile strength, based on the nominal bar area, of 430 Mpa for ASTM Designation: A615 and A615M, Grade 300 bars. Prior to use in the work, welded splices shall be qualified by tests made on sample splices.

Reinforcing bars shall be preheated for a distance of not less than 150mm on each side of the joint prior to welding.

For all welding of ASTM Designation: A615 and A615M, Grade 300, the requirements of Table: Minimum Preheat and Interpass Temperatures of AWS D1.4 are superseded by the following:

- The minimum preheat and interpass temperatures shall be 200°C for Grade 300 bars. Immediately after completing the welding, at least 150 mm of the bar each side of the splice shall be covered by an insulated wrapping to control the rate of cooling. The insulated wrapping shall remain in place until the bar has cooled below 90°C.
- 2. In the event that any of the specified preheat, interpass and post weld cooling temperatures are not met, all weld and heat affected zone metal shall be removed and the splice rewelded.
- a) Qualification of Welding Splicing

Procedures to be used in making splices in reinforcing bars and welders employed to make splices in reinforcing bars shall be qualified by tests performed by the Contractor on sample splices of the type to be used, before making splices to be used in the work. Each welder qualifications test shall consist of 2 sample splices.

Completed sample splices shall be at least one-meter-long with the splice at midlength. The sample splices shall be made and tested by the Contractor in the presence of the Engineer or the Employer's Representative's authorized representative. When samples are tested by a commercial agency, the test shall be witnessed by the Engineer or the Employer's Representative's authorized representative. A copy of the test results shall be furnished to the Engineer.

b) Non-destructive Splice Tests

Radiographic examinations shall be performed by the Contractor on at least 25percent of all full penetration welded splices in accordance with the requirements of AWSD1.4 and these specifications. For each weld found to be defective, one additional splice, as selected by the Engineer, shall be examined radiographically by the Contractor.

# **404.4Method of Measurement**

# Add the following paragraphs:

Whenever any other alternative or option is shown or noted on the plans, or permitted by these specifications, the quantities of reinforcing steel bars and welded wire fabric will be computed on the basis of dimensions, and type of reinforcement shown on the plans and no change in the quantities to be paid for will be made because of the use by the Contractor of the alternative or options.

The weight of plain or deformed bars or bar-mat shall be computed from the theoretical weight of plain round bars of the same nominal size as shown on the following table:

Size (mm)	Unit Weight (kg/m)
10	0.616
12	0.888
16	1.579
20	2.466
25	3.854
28	4.833
32	6.313
36	7.991

For any structure or element of any structure defined in these Specifications as being measured in per unit (each), per square meter, or per linear meter, no separate measurement shall be made under Item 404: Reinforcing Steel, as they are deemed included in the unit pay item of the structure.

# 404.5Basis of Payment

# Modify the last paragraph to read as follows:

Payment will be made under:

Pay Item Number	Description	Unit of Measurement
404(1)a	Reinforcing Steel Bars, Grade 40	Kilogram
404(1)b	Reinforcing Steel Bars, Grade 60	Kilogram

# Item 405 – Structural Concrete

# 405.1.2 Classes and Uses of Concrete

# Revise this Sub-section 405.1.2 as follows:

Five classes of concrete are provided for in this Item. Each class shall be used in that part of the structure as called for on the plans.

The classes of concrete will generally be as follows:

1) ClassA -For reinforced concrete box culverts, headwalls, wing walls, drainage manholes, catch basins, lined ditches, sidewalk and parapet median and where shown on the plans.

f'c = 20.68 MPa @ 28 days

2) Class A-For bored piles, pile caps, footings, abutments, columns, copings, diaphragms, deck slabs, retaining walls, barriers and railings, approach slabs and where shown on the plans.

f'c = 27.58 Mpa @ 28 days

3) Class P -For pre-stressed concrete structure members and riser

f'c = 41.37 Mpa @ 28 days

4) Class B -For levelling pad of abutments, stub walls, retaining walls and where shown on the plans.

f'c = 18 Mpa @ 28 days

5) Lean Concrete -For base of drainage manholes, catch basins, box culverts, temporary concrete encasing reinforcing steel bars for future expansion, i.e, deck slab overhang and end blocks/ diaphragms and where shown on the plans.

f'c = 16.5 MPa @ 28 days

# **405.2Material Requirements**

#### 405.2.1 Portland Cement

#### Add the following to Sub-Section 405.2.1:

All cement to be used for Item 405, Structural Concrete shall be Portland Cement, Type I in accordance with AASHTO M85.

#### 405.2.3 Coarse Aggregates

Modify Table 405(1) to read as follows:

Standard	Alternate	Class A	Class A	Class	Class	Class	Lean
( <b>mm</b> )	US Standard	(20.68Mpa)	(27.58Mpa)	В	С	Р	Concrete
63	2 1/2"						
50	2"						
37.5	1 1/2"			100			100
25	1	100	100	95-		100	95-100
				100			
19	3/4"	90-100	90-100	-		90-	-
						100	
12.5	1/2"			25-60	100		25-60
9.5	3/8"	20-55	20-55	-	40-70	20-55	-
4.75	No. 4	0-10	0-10	0-5	0-15	0-10	0-5

 Table 405(1) - Grading Requirements for Coarse Aggregate

#### 405.3Sampling and Testing of Structural Concrete

#### Add the following requirement:

In the event of compressive strength results not meeting the requirements of the Specifications or of doubtful nature, the Employer's Representative shall proceed to check the compressive strength

using specimen taken from suitable points in the constructed structure using rotary coring.

# **405.4Production Requirements**

#### 405.4.1 Proportioning and Strength of Structural Concrete

# Modify Table 405(2) to read: Table 405(2) - Composition and Strength of Concrete for Use of Structures

Class of Concrete	Minimum Cement Content	Maximum Water/Cement Ratio	Consistency Range in Slump	Designated Size of Coarse Aggregate Square Opening Std.	Minimum Compressiv e Strength of 150x300mm Concrete Cylinder Specimen at 28 days
	kg/m3	kg/kg	mm	mm	N/mm2
А	360	0.53	50-100	20	20.68
А	400	0.49	50-100	20	27.58
В	320	0.58	50-100	40	18.00
C	380	0.49	50-100	15	20.68
Р	480	0.41	50-100	20	41.37
Lean Concrete	240	0.62	120-200	50	16.5

# 405.4.4 Mixing and Delivery

#### Add the following requirement in 405.4.4:

Temperature of Freshly Mixed Concrete. T 309

Temperature of freshly mixed concrete shall not exceed 35 degrees Celsius.

# Modify the text of Item 3 – Mixing Concrete at Central Plant with the following:

Concrete batching plant shall be wet mix type with computerized control for mixing. Each batch mix record shall be stored in a computer hard drive.

# Add the following as Sub-Section 405.4.5:

#### 405.4.5 Protection of Concrete from Environmental Conditions

1. General

Precaution shall be taken as needed to protect concrete from damage due to weather or other environmental conditions during placing and curing operations. Concrete that has been damaged by weather conditions shall be either repaired to an acceptable condition or removed and replaced.

2. Rain Protection

Under conditions of rain, the placing of concrete shall not commence or shall be stopped unless adequate protection is provided to prevent damage to the surface mortar or damaging flow or washing of the concrete surface.

3. Hot Weather Protection

When the ambient temperature is above 32°C, the forms, reinforcing steel, steel beam flanges, and other surfaces which will come in contact with the mix shall be cooled to below 32°C, by means of a water spray or other approved methods.

The temperature of the concrete at the time of placement shall be maintained within the specified temperature range by any combination of the following:

- Shading the materials areas or the production equipment.
- Cooling the aggregates by sprinkling with water, which conform to the requirements.
- Cooling the aggregates or water by refrigeration or replacing a portion or all the mix water with ice that is flakes or crushed to the extent that the ice will completely melt during mixing of the concrete.
- Liquid nitrogen injection

# **405.5Method of Measurement**

## Add the following paragraph to Section 405.5:

Falseworks and formworks shall not be measured separately; it shall be deemed incidental to structural concrete works.

#### 405.6Basis of Payment

#### Revise the last paragraph to read:

Payment will be made under:

Pay Item	Description	Unit of Measurement
405(1)a3	Structural Concrete, Class A, 20.68 MPa, 28 days	Cubic meter
405(1)b3	Structural Concrete, Class A, 27.58 MPa, 28 days	Cubic meter
407(8)	Lean Concrete	Cubic Meter

# PART G

# **Drainage and Slope Protection Structures**

# PART G – DRAINAGE AND SLOPE PROTECTION STRUCTURES

# Item 500 – Pipe Culverts and Storm Drain

# 500.1Description

# Add the followingat the end of this section:

This Item shall also include:

- 1. the construction of drainage box culverts in accordance with relevant sections of the Specifications, the Plans and as directed by the Engineer, and
- 2. The construction of Waterway Channel from Sta.0+060 to Sta.1+200.

# **500.2Material Requirements**

# Add the following paragraph at the end of this section:

At least one representative sample for every fifty pieces of the delivered pipes shall be subjected to test for strength, absorption and dimensions or any other tests required by the Engineer.

The materials for box culverts and drainage works including inlets and outlets shall meet requirements of the relevant subsections in the following Items:

Item 103: Structure Excavation

Item 404: Reinforcing Steel

Item 405: Structure Concrete

Class A: 20.68 Mpa

Class A: 27.58 Mpa

Class B: 18.00 Mpa

Lean Concrete: 16.5 Mpa

Item 407: Concrete Structures

Item 500: Pipe Culverts and Storm Drains

Item 614: Water stop

The Contractor shall propose these materials with brochures of makers for prior approval of the Engineer.

# **500.3**Construction Requirements

# Add the followingat the start of this section:

The Contractor shall prepare and submit shop/working drawings and method statement based on the as-staked survey, including dewatering and temporary diversion of waterways, if required, for approval of the Engineer at least 14 days before starting the construction.

# 500.3.6 Backfilling

# Add the followingat the end of this sub-section:

The Contractor shall stockpile suitable material from the roadway and/or structure excavation for backfilling of culverts.

# 500.4 Method of Measurement

# Modify the 4<sup>th</sup> paragraph of Section 500.4 to read as follows:

No separate payment shall be made for Class A and B bedding material placed and approved; it shall be deemed be included in the pipe culvert payment.

# Add the following at the end of this section:

- 1. The works for Storm Drain (RCBC Type) accepted by the Engineer shall be measured for payment, as follows:
  - Structure excavation in cubic meter.
  - Storm Drain (RCBC Type) in linear meter. Lean Concrete and Granular Bedding materials shall not be measured separately but shall be deemed incidental to the construction and included in the per linear meter payment of the structure.
- 2. Reinforced Concrete Lined Ditch for payment shall be made by linear meter measured at site for actual length completed and accepted by the Engineer. Lean Concrete and Granular Bedding materials shall not be measured separately but shall be deemed incidental to the construction and included in the per linear meter payment of the structure.
- 3. The Works for Connector Drains (RCBC Type) shall be measured for payment, as follows:
  - Structure excavation in cubic meter.
  - Structural Concrete Class A 20.68 MPa in cubic meter
  - Reinforcing Steel Bar in kilogram
  - Lean Concrete in Cubic Meter

- Granular Bedding materials shall not be measured separately but shall be deemed subsidiary to lean concrete.
- 4. The Works for Waterway Channel from Sta.0+060 to Sta.1+200 shall be measured for payment, as follows:
  - Gravel Surface Course in cubic meter.
  - Structural Concrete Class A 20.68 MPa, 28 days in cubic meter
  - Reinforcing Steel Bar in kilogram
  - Gabions in cubic meter.

### 500.5 Basis of Payment

# Modify the 3<sup>rd</sup> and 4<sup>th</sup> paragraphs of Section 500.5, to read as follows:

No separate payment shall be made for placing backfill material around pipe culverts; it shall be considered included in the payment for excavation of the backfill materials.

Pay Item	Description	Unit of
Number		Measurement
103(1)a	Structure Excavation, Common Soil	Cubic Meter
103(1)c	Structure Excavation, Hard Rock	Cubic Meter
103(6)a	Pipe Culvert and Drain Excavation, Common Soil	Cubic meter
103(6)c	Pipe Culvert and Drain Excavation, Hard Rock	Cubic meter
404(1)a	Reinforcing Steel, Grade 40	Kilogram
404(1)b	Reinforcing Steel, Grade 60	Kilogram
405(1)a3	Structural Concrete Class A, 20.68 Mpa, 28 days	Cubic Meter
407(8)	Lean Concrete	Cubic Meter
500(1)a1	Pipe Culvert 610mm dia. Class II	Linear meter
500(2)a	Storm Drain, RCBC Type (1.25 x 1.25)	Linear Meter
500(2)b	Storm Drain, RCBC Type (1.50 x 1.25)	Linear Meter
500(2)c	Storm Drain, RCBC Type (1.50 x 1.50)	Linear Meter
500(2)d	Storm Drain, RCBC Type (1.50 x 1.80)	Linear Meter
500(2)e	Storm Drain, RCBC Type (1.80 x 1.50)	Linear Meter
500(2)f	Storm Drain, RCBC Type (1.80 x 1.80)	Linear Meter
500(2)g	Storm Drain, RCBC Type (1.80 x 2.10)	Linear Meter
500(2)h	Storm Drain, RCBC Type (2.40 x 1.80)	Linear Meter
500(2)i	Storm Drain, RCBC Type (2.40 x 2.10)	Linear Meter
500(2)j	Storm Drain, RCBC Type (2.40 x 2.40)	Linear Meter
500(2)k	Storm Drain, RCBC Type (2.40 x 2.75)	Linear Meter
SPL500(3)	Reinforced Concrete Lined Ditch (0.80 x 0.80)	Linear Meter

#### Pay items and description are modified as follows:

#### Item 502 – Manholes, Inlets and Catch Basins

#### Add the following paragraph to Section 502.1 to read as follows:

### **502.2Material Requirements**

# Modify the first sentence of the first paragraph to read as follows:

All concrete shall be Class A 20.68 Mpa unless otherwise specified or required by the Engineer and reinforcing steel shall be Grade 60 for 16 mm diameter and above and Grade 40 for below 16 mm diameter.

# **502.4Method of Measurement**

# Add the following paragraphs to Section 502.4 to read as follows:

Excavation for manholes, inlets and catch basins will be measured and paid for as provided in Item 103 Structure Excavation.

No separate measurement for payment shall be made for reinforced concrete or steel grating cover, reinforcing steel and foundation fill or any bedding materials; it shall be deemed included in this item.

# 502.5Basis of Payment

# Modify last paragraph to read as follows:

Payment will be made under:

Pay Item Number	Description	Unit of Measurement
103(1)a	Structure Excavation, Common Soil	Cubic Meter
103(1)c	Structure Excavation, Hard Rock	Cubic Meter
502(1)a7	Manhole, 1.25m x 1.25m, Concrete	Each
502(1)a8	Manhole, 1.50m x 1.25m, Concrete	Each
502(1)a9	Manhole, 1.50m x 1.50m, Concrete	Each
502(1)a10	Manhole, 1.50m x 1.80m, Concrete	Each
502(1)a11	Manhole, 1.80m x 1.50m, Concrete	Each
502(1)a12	Manhole, 1.80m x 1.80m, Concrete	Each
502(1)a13	Manhole, 1.80m x 2.10m, Concrete	Each
502(1)a14	Manhole, 2.40m x 1.80m, Concrete	Each
502(1)a15	Manhole, 2.40m x 2.10m, Concrete	Each
502(1)a16	Manhole, 2.40m x 2.40m, Concrete	Each
502(1)a17	Manhole, 2.40m x 2.75m, Concrete	Each
502(2)a7	Inlet, Curb	Each
502(3)a7	Catch Basin, Junction Box	Each

# Item 505 – Riprap and Grouted Riprap

# 505.3.2Placing

# Insert as 1<sup>st</sup> paragraph of 505.3.2:

The stones for grouted riprap shall be embedded into the 50 mm base mortar.

#### **505.5Basis of Payment**

Payment will be made under:

Pay Item Number	Description	Unit of Measurement
505(2) a	Grouted Riprap, Class A	Cubic meter

# Item 511 – Gabions and Mattresses

# 511.5Basis of Payment

# Revise the last paragraph to read:

Payment will be made under:

Pay Item Number	Description	Unit of Measurement
511(1)	Gabions, (0.50 m x 1.00 m x 2.00 m)	Cubic meter
511(3)	Filter Cloth	Square meter

# PART H

# **Miscellaneous Structures**

# **PART H - MISCELLANEOUS STRUCTURES**

# Item 600 – Curb and Gutter

#### 600.1 Description

This Item shall consist of the construction of curb and gutter either precast or cast in place, made of concrete in accordance with this Specifications at the location, and in conformity with the lines, grades, dimensions and design, shown on the Plans or as required by the Engineer.

#### 600.2 Material Requirements

# 600.2.1 Material for Bed Course

Bed course materials as shown on the plans shall be Aggregate Subbase Course conforming to Item 200 – Aggregate Subbase Course.

#### 600.2.2 Concrete

Concrete shall be Class A 20.68 MPa indicated on the Plans and shall conform to the requirements of Item 405, Structural Concrete.

#### 600.2.3 Expansion Joint Filler

Expansion joint shall conform to the requirements of AASHTO M 153/Item 705.

#### 600.2.4 Cement Mortar

Cement mortar shall consist of one part of Portland cement and two parts of fine aggregates with water added as necessary to obtain the required consistency. The mortar shall be used within 30 minutes of preparation.

#### 600.2.5 Bonding Compound

Where bonding compound is used, it shall conform to AASHTO M 200.

#### 600.3 Construction Requirements

#### 600.3.1 Bedding

Excavation shall be made to the required depth and the base upon which the curb and/or gutter is to be set shall be compacted to a firm and even surface. All soft and unsuitable material shall be removed and replaced with suitable material.

Bed course material shall be placed and compacted to form a bed of the required thickness as shown on the Plans.

## 600.3.2 Cast in Place Curb and Gutter

#### 600.3.2.1 Placing

Forms shall conform to the requirements of Item 407, Concrete Structures. Metal forms shall be of an approved section.

Forms to hold the concrete shall be built and set-in-place as described in Item 407, Concrete Structures. Forms for at least 50 m of curb and gutter shall be in-place and checked for alignment and grade before concrete is placed. Curbs and gutters constructed on curves shall have forms of either wood or metal and they shall be accurately shaped to the curvature shown on the Plans.

Mixing, Placing, Finishing and curing of concrete shall conform to the requirements of Item 405, Structural Concrete, as modified by the requirements below.

The concrete shall be placed in the forms in layers of 100 or 125 mm each, and to the depth required. It shall be tamped and spaded until mortar entirely covers the top and surfaces of the forms. The top of the concrete shall be finished to a smooth and even surface and the edges rounded to the radii shown on the Plans. Before the concrete is given the final finishing, surface of the gutter shall be tested with a 3-m straight-edge and any irregularities of more than 10 mm in 3 m shall be corrected.

The curb and gutter shall be constructed in uniform section of not more than 50 m in length except where shorter sections are required to coincide with the location of weakened planes or contraction joints of 2 m long. The sections shall be separated by sheet templates set perpendicular to the face and top of the curb and gutter. The templates shall be approximately 5 mm in thickness and of the same width as that of the curb and/or gutter and not less than 50 mm deeper than the depth of the curb and/or gutter. Templates shall be set carefully and held firmly during the placing of the concrete and shall remain in place until the concrete has set sufficiently to hold its shape but shall be removed while the forms are still in place. A preformed joint filler approved by the Engineer may be used in lieu of the sheet template mentioned above. In this event the fiber board shall be pre-cut to the shape of the curb so that its outer edge will be flushed with the abutting curb and/or gutter.

Expansion joint shall be formed at intervals shown on the Plans. Where a curb is placed next to a concrete pavement, expansion joints in the curb shall be located opposite expansion joints in the pavement.

The form shall be removed within 24 hours after the concrete has been placed. Minor defects shall be repaired with mortal containing one part of Portland cement and two parts of fine aggregate. Plastering shall not be permitted and all rejected portions shall be removed and replaced at the Contractor's expense. The exposed surface shall be wetted soft brick or wood until they are smooth. The surfaces shall be wetted thoroughly, either by dipping the brick or wood in water, or by throwing water on the surfaces with a brush. After the concrete has been rubbed smooth using water, it shall then be rubbed with a thin grout containing one part of Portland cement and one part of fine aggregates. Rubbing with grout shall continue until uniform color is produced. When completed, the concrete shall be covered with suitable material may be applied as provided in Item 405, Structural Concrete. The concrete shall be suitably protected from the weather until thoroughly hardened.

After the concrete has set sufficiently, the spaces on the back of the curb which were excavated for placing the curb shall be refilled to the required elevation with suitable material which shall be tamped in layers of not more than 150 mm until consolidated.

# 600.3.3 Precast Curb and Gutter

#### 600.3.3.1 Placing

The precast concrete curb and gutter shall be set in 20 mm of cement mortal as specified in Subsection 600.2.4 to the line level and grade as shown on the approved Plans.

The precast curb shall not be more than 20 cm in width at the top portion and not be more than 25 cm at the base. The precast curb and gutter shall be 1.0 m in length and shall be put side consecutively with joint in between.

Joints between consecutive curb and gutter shall be filled with cement mortar to the full section of the curb and gutter. Expansion joints shall be formed at intervals shown on the Plans. Where a curb and gutter is placed next to a concrete pavement, expansion joints in the curb and gutter shall be located opposite expansion joints in the pavement.

Minor defects shall be repaired with mortar containing one part of Portland cement and two parts of fine aggregates.
Plastering shall not be permitted and all rejected portions shall be removed and replaced at the contractor's expense. The exposed surface shall be finished by rubbing the surfaces with a wetted soft brick or wood until they are smooth. The surfaces shall be wetted thoroughly, either by dipping the brick or wood in water, or by throwing water on the surfaces with a brush. After the concrete has been rubbed smooth using water, it shall then be rubbed with a thin grout containing one part of Portland cement and one part of fine aggregate. Rubbing with grout shall continue until uniform color is produced.

### 600.3.3.2 Handling Precast Curb and Gutter

- 1. In preparation for the handling of precast curb and gutter, all fabricated curb and gutter of one (1) meter in length shall be provided or inserted with 2(25 mm) Ø PVC pipes for fitting at their required locations. The PVC pipes shall be placed 25 mm from both edge during the plastic state of fresh concrete.
- 2. Precast curb and gutter shall be lifted on upright position and not at the points of support and shall be the same during transporting and storage.
- 3. Extreme care shall be exercised in handling and moving precast curb and gutter to avoid cracking.
- 4. No precast curb and gutter shall be used that does not reach its final position in the forms with the required time stipulated prior to installation.
- 5. Precast curb and gutter shall be transferred to the construction site. Fresh curb and gutter shall not be placed against in-situ concrete which has been in a position for more than 30 minutes.
- 6. Precast curb and gutter may only be transported to the delivery point in truck agitators truck mixer operating at the speed designated by the manufacturer of the equipment, provided that the consistency and workability of the mix concrete upon discharge at the delivery point is suitable for adequate placement.

# 600.4 Method of Measurement

The length of curb and gutter to be paid shall be the number of linear meters of curb and gutter (cast in place) or the number of pieces of precast curb and gutter of the required dimension shown on the Plans measured along its front face in-place, completed and accepted. No deductions shall be made for flattening of curbs at entrances and no additional allowances shall be made for curbs and gutters constructed on curves.

### 600.5 Basis of Payment

The length of curb and gutter determined in Subsection 600.4, Method of Measurement, shall be paid for at the contract unit price per linear meter for curb and gutter which price and payment shall constitute full compensation for furnishing and placing all materials for concrete, forms for drainage openings, excavation for curb and gutter, backfilling, dumping and disposal of surplus materials, and for all labor, equipment, tools and incidentals necessary to complete the Item.

#### Modify Sub-Section 600.5 to read as follows:

Payment will be made under:

Pay Item Number	Description	Unit of Measurement
600(1)a	Concrete Curb, (Cast in Place, Flush), 250mm x	Linear Meter
	178mm/200mm	
600(1)b	Concrete Curb, (Cast in Place, Drop), 280mm	Linear Meter
	/360mm x 175mm/220mm	
600(1)c	Concrete Curb, (Cast in Place, Upstand), 200mm x	Linear Meter
	450mm	
600(4)a	Curb and Gutter, Cast in Place, Type 1, 350mm x	Linear Meter
	670mm	
600(4)b	Curb and Gutter, Cast in Place, Type 2, 220mm x	Linear Meter
	670mm	

#### Item SPL 601(2) – Sidewalk Paving (Stamped Concrete Finish)

#### SPL 601(2).1 Description

This Item shall consist of the construction of Portland Cement Concrete sidewalk (Stamped Concrete Finish) in accordance with this Specifications and to the lines, grades, levels and dimensions as shown on the Plans or as required by the Engineer.

#### SPL 601(2).2 Material Requirements

#### **Portland Cement Concrete**

- Concrete shall be Class A20.68 MPa conforming to Item 405, Structural Concrete.
- Aggregates shall conform to ASTM C 33.
- Mixing water shall be fresh, clean and potable.
- No admixtures containing calcium chloride shall be permitted.

#### **Reinforcing Steel Bars**

All reinforcing bars must conform to the requirements of Item 404- Reinforcing Steel.

#### **Expansion Joint Filler**

Preformed joint filler shall have a thickness of 5mm and shall conform to the requirements of Item 311, Portland Cement Concrete Pavement.

#### Forms

Forms shall be of wood or metal as approved by the Engineer and shall extend to the full depth of the concrete. All forms shall be straight, free from warps and of adequate strength to resist distortion.

#### **Bed Course Material**

Bed course material shall be Aggregate Subbase Course conforming to the requirements of Item 200 – Aggregate Subbase Course.

#### Finish Coloring, Imprinting, Curing and Sealing Materials

The stamped concrete pattern and color will follow the Pedestrian/sidewalk already constructed in New Clark City. Provide mock up field samples of surface colors, textures and patterns for Engineer's approval prior to beginning the work. Samples shall be 48 inches by 48 inches (1219 mm by 1219 mm) in size illustrating paving finishes.

- a) Color Hardener: The concrete shall be colored with the same color and pattern already constructed in New Clark City. The grade of the hardener shall be Heavy Duty Grade.
- b) The Release Agent color shall be applied to all concrete surfaces to be imprinted and textured. The pedestrian/sidewalk will be stamped concrete finished.
- c) The pattern shall follow the pattern and color on the constructed New Clark City sidewalk/ pedestrian lanes. All imprinting tools used in the execution of this project as approved by the Engineer.
- d) All imprinted slabs shall conform to the guidelines and recommendations of the American Concrete Institute for reinforcement of cast-in-place concrete slabs.

- e) All stamped concrete slabs shall be cured with Color Cure, Clear Cure or approved equal. Stamped concrete slabs are not compatible with curing compounds, and do not typically require membrane or mechanical curing. Imprinted/textured concrete may be cured using non staining reinforced curing paper when necessary.
- f) All stamped concrete slabs shall be sealed in accordance with the manufacturer's recommendations.

### SPL 601(2).3 Construction Requirements

#### Installation

- a. The area to receive imprinted concrete shall have the sub-grade prepared and compacted as required by local governing authority and conditions.
- b. The formwork shall be installed in accordance with the drawings. The slab thickness shall be in accordance with the construction drawings.
- c. Provide reinforcement as specified in the drawings.
- d. Control joints and/or expansion joints shall be provided in accordance with the drawings and the guidelines established by the American Concrete Institute. As with any concrete slab, imprinted concrete shall have construction joints, control joints and expansion joints. The contractor shall advise and work with the Engineer to determine the best location for these joints to minimize the visibility of the joints and to minimize unsightly cracking.
- e. The concrete shall be placed and screeded to the finished grade and floated to a uniform surface using standard finishing techniques.
- f. Color Hardener shall be applied evenly to the surface of the fresh concrete by the dry-shake method using a minimum of 60 pounds per 100 square feet. It shall be applied in two or more shakes, floated after each shake and troweled only after the final floating.
- g. While the concrete is still in its plastic stage of set, the imprinting tools shall be applied to the surface.
- h. Approved curing method shall be applied in accordance immediately after completing the imprinting process.

i. After initial curing period, the imprinted joints shall be grouted using a sand/cement/water mixture and the surface of the slab shall be sealed.

#### **Operation and Maintenance**

All installations should be regularly maintained to top quality appearance. Installations shall be cleaned and resealed as required by volume and intensity of traffic.

#### SPL 601(2).4 Method of Measurement

The quantity to be paid for shall be the number of square meters of Sidewalk/Pedestrian Lane (Stamped Concrete Finish) measured as completed in-place and accepted.

#### SPL 601(2).5 Basis of Payment

The quantity shall be paid for the contract unit price per square meter of Sidewalk/Pedestrian Lane (Stamped Concrete Finish) which price and payment shall constitute full compensation for furnishing and placing all materials, forms, labor, equipment, tools and incidentals necessary to complete the Item.

Payment will be made under:

Pay Item Number	Description	Unit of Measurement
SPL 601(2)	Sidewalk/Pedestrian Lane Paving, 100 mm thick (Stamped Concrete Finish)	Square Meter

# Item SPL601(3) – Bike Lane Paving (Sandwash Finish Texture with Franciscan Red Color)

#### SPL601(3).1 Description

This item shall consist of the construction of Portland Cement Concrete Bike Lane (Sandwash Finish Texture) System including sub-base, formwork, reinforcement, concrete, jointing and surface treatments in accordance with the Drawings.

#### SPL 601(3).2 Material Requirements

#### **Portland Cement Concrete**

- a) Portland cement: shall conform to ASTM C 150 Type I
- b) Concrete shall be at least Class A 20.68 MPa conforming to Item 405, Structural Concrete.

- c) Aggregates shall conform to ASTM C 33 and be optimized with minimal gap grading and the largest top sized aggregate feasible.
- d) Mixing water shall be fresh, clean and potable.
- e) Air Entrainment: Conforming shall conform to ASTM C260.
- f) Water-reducing admixtures and/or super-plasticizers are permitted and shall conform to ASTM C 494.
- g) Each type or class of cementitious material of the same brand shall be obtained from same manufacturer's plant, aggregate from one source, and admixtures through one source from a single manufacturer.

#### **Reinforcing Steel Bars**

- a) Reinforcing Steel shall conform to ASTM A615, clean and free of rust, dirt, grease or oils.
- b) Tie Wire shall be 16-gauge plain cold-drawn steel conforming to ASTM A82, clean, and free of rust, dirt, grease or oils.
- c) Provide supports for reinforcement including bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcing bars in place.
- d) Polypropylene Fiber Reinforcement: 100% virgin multifilament polypropylene fibers, complying with ASTM C 1116 Type III.

#### **Expansion Joint Filler**

- a) Provide expansion joints as required- diamond dowels are required to provide load transfer at all expansion joints.
- Expansion joints are to be concealed type <sup>1</sup>/<sub>4</sub>" (6.5mm) wide with a sawed cut placed directly over the expansion joint

#### Forms

Forms shall be either of wood, plastic coated plywood for vertical faces or metal as approved by the Engineer and shall extend to the full depth of the concrete. All forms shall be straight, free from warps and of adequate strength to resist distortion and conforms to the recommended practice for concrete formworks (ACI 347) latest edition.

#### **Bed Course Material**

Bed course material shall be Aggregate Subbase Course conforming to the requirements of Item 200 - Aggregate Subbase Course.

#### Sand

Obtain sand determined suitable for the SandwashFinish Texture process be it colored or natural to meet samples and mock-ups.

#### SPL 602(2).3 Construction Requirements

#### Installation

#### Sub-grade

- a) Subgrade shall meet the requirements in accordance with Item 105 Subgrade Preparation and the construction drawings.
- b) A minimum of 2" of well-draining road base or no fines crushed stone or crushed recycled concrete is required over the prepared sub-grade to provide the correct base for Sandwash Finish Texture due to uniformity of hydration requirements.
- c) Keep bike lane base damp prior to placing concrete.
- d) Ensure complete understanding of subgrade preparation, reinforcement, penetrations, mix design, placing and finishing requirements, elevations, etc.

#### Formworks

- a) Design and engineering of form work as well as its construction shall follow the latest construction standards.
- b) Formwork to conform to recommended practice for concrete form work (ACI 347), latest edition.
- c) Form lumber is new #2 or better grade wood or plastic coated plywood for vertical faces.
- d) Allow forms to remain in place long enough restrain the concrete during set and for a minimum of 12 hours after pour.

# Concrete Mix Specific to Sandwash Finish Texture Requirements

#### **Requirements**:

1. Slump: 3 to 5-inch slump. Obtain approval from Owner's Authorized Representative if slump is outside these parameters.

- 2. Minimum PSI Rating at 28 days: 4,000.
- 3. Cement quantity per yard of mix:
  - a. Minimum: 6 sacks.b. Maximum: 7 sacks.
- 4. Water/cement ratio: Maximum .6.
- 5. Use maximum 1" top size aggregate.
- 6. Admixtures:
  - a. Air entrainment: As determined required by aggregate size and environment.
  - b. Water Reducing: Mid-range water reducers recommended.
- 7. Do not use accelerators.

#### Sandwash Finish Texture Installation

The finished surface shall be the same as the constructed Bike lanes in New Clark City in Franciscan Red color and in accordance with the drawings. Procedure is described as follows:

- 1. Integral Color: Concentrated dry powder iron oxide pigments designed to color 1" thick concrete with 3/8" aggregates and fibermesh. This will be poured on the newly poured concrete slab while still wet to obtain a monolithic concrete finish.
- 2. After bull floating and hand floating the edges do not scrape slurry or cream to fill holes or voids. Use the float to work up the paste and rub out voids if possible. Additional concrete can be added to fill holes but be sure to tamp the aggregate down.
- 3. Color Hardener: a dry-shake material for coloring and hardening concrete.
- 4. Apply Surface Deactivator to the Sandwash Texture once the concrete can support light foot traffic (in socks or soft shoes) but can still be easily marked by dragging your fingers across the Sandwash Texture surface. Use a good quality pump style sprayer to apply the Surface Deactivator in a light uniform fashion at a rate of 200-400 square feet per gallon. A light uniform application of the Surface Deactivator is superior to a heavy application that is uneven or blotchy.
- 5. The exposing process can begin after the concrete has set to a point adequate enough to bear the weight of workmen without suffering

sand tear out. Soft soled rubber boots are recommended being sure not to twist or turn your foot if exposing the same day. In some circumstances such as cooler weather and late day pours it may be better to leave the Sandwash Texture overnight as the Surface Deactivator will hold an extended set. Assess this timing in the sampling and mock-up process first.

- 6. Use a 17" or equal floor scrubber (commonly referred to as a swing machine or side-by-side machine) equipped with brushes to expose the concrete. Three brushes are recommended a soft brush for exposing the same day when being careful with the Sandwash Finish Texture is important, a hard-bristled brush for more aggressive scrubbing or exposing the next day and a steel wire brush for circumstances where inadequate aggregate exposure was achieved with the Surface Deactivator.
- 7. Use a pressure washer to remove excess slurry from the surface of the concrete while exposing with the scrubber. Do not use the pressure washer to solely expose the concrete as this can result in blowouts and striping issues.
- 8. Rinse the concrete thoroughly to minimize slurry that will harden and require removal at a later date. Dig a hole or trench for the slurry to settle out in do not wash slurry down drains or onto the street as this may result in fines in some marketplaces. Additionally, from an environmental it is poor practice as the runoff water will be high in PH and can kill fish or contaminate wetland areas.
- 9. After the surface has been uniformly exposed it is recommended to keep the Sandwash Finish Texture wet in warm weather for a period of 12-48 hours to promote additional hydration of the cement and reduce shrinkage crack potential.

### Jointing

A. Construction and Contraction Joints:

- 1. Saw cut construction and contraction joints in locations indicated on drawings.
- 2. Perform jointing with a circular saw walk behind saws are not acceptable unless of the early entry type to maintain required straightness standards.
- 3. Joint Width: Per drawings and approved samples. Do not exceed 1/4-inch in width.
- 4. Saw cut joints in a straight line with no overcutting. Use a hand tool to saw cut up to vertical edges such as walls, steps, curbs and columns.
- B. Isolation Joint Caulking:

Install isolation joint caulking to be installed under Section 07900 – Joint Sealers.

### Curing

After initial Sandfinish Texture exposure, wet cure the slab for a minimum of 24 hours by means of fogging, sheet or spraying.

#### Washing and Sealing

- 1. After the Sandwash Texture has cured for 14-28 days it is ready for final cleaning and sealing. mild hydrochloric acid solution over pre-wetted concrete to remove any slurry or efflorescence that may have developed. It is recommended to use the scrubber equipped with a Nylogrit brush for this application.
- 2. Rinse the Sandwash Texture thoroughly and allow to dry overnight use caution tape to keep anyone from walking on the surface. The following day an application of Con-Shield Concentrate 1:1 with water or Stabilizer Pro undiluted in a heavy fashion using a pump style sprayer is recommended so as to reduce efflorescence potential. Use a soft bristled brush to work the densifier into the surface for a period of 10-15 minutes feeding additional material to the Sandwash Texture if it absorbs the first application too quickly. Once this wet reactive time period is met, broom the surface until uniform in appearance and allow to dry thoroughly.

Apply either water base sealer or fast drying, solvent based, color enhancing methacrylate sealer diluted with 1:1 with xylene to improve penetration with a pump style sprayer. 3. Allow the surface to dry 2-12 hours before turning over for foot traffic and 12-24 for vehicular traffic.

#### SPL 602(2).4 Method of Measurement

The quantity to be paid for shall be the number of square meters of Bike Lane (Sandwash Finish Texture) measured as completed in-place and accepted.

#### SPL 602(2).5 Basis of Payment

The quantity as determined in SPL 601(2).4, Method of Measurement, shall be paid for the contract unit price per square meter of bike lane which price and payment shall constitute full compensation for furnishing and placing all materials, forms, labor, equipment, tools and incidentals necessary to complete the Item.

Payment will be made under:

Pay Item Number	Description	Unit of Measurement
SPL601(3)	Bike Lane Paving, 100 mm thick (Sand Wash Finish Texture with Franciscan Red Color)	Square Meter

# Item 605 – Road Sign

# 605.1Description

# Add the following to 605.1:

The number and locations of the road signs required are as shown on the Plans. The quantities of each kind of the different types of road signs as reflected in the Bill of Quantities may increase or decrease depending on the actual requirements as determined by the Engineer.

# 605.5Basis of Payment

# Modify 2nd paragraph of 605.5 to read:

Payment will be made under:

Pay Item Number	Description					Unit of Measurement	
605(1)c1	Warning	Signs,	600mm,	W1-3A	,	Horizontal	Each

	Alignment Reverse Turn L or R	
605(1)d1	Warning Signs, 600mm, W1-4A, Horizontal Alignment Reverse Curve Turn L or R	Each
605(1)g2	Warning Signs, 600mm, W2-1B, Intersection and Junction Signs Priority Cross	Each
605(1)l2	Warning Signs, 600mm, W2-6B, Intersection and Junction Signs Priority Junction	Each
605(1)q1	Warning Signs, 600, W3-1A, Advance Warning of Traffic Control Device Signs Signal Ahead	Each
605(2)a1	Regulatory Signs, 450 x 450 mm , R1-1A, Priority Signs Stop	Each
605(2)b4	Regulatory Signs, 640 x 900 mm , R1-2P, Priority Signs Give Way	Each
605(2)g3	Regulatory Signs, 450 x 750mm, R2-3PA, Direction Signs KEEP RIGHT; Plate Type	Each
605(2)p1	Regulatory Signs, 600mm, R3-15A, Prohibitive or Restrictive Signs Turning Prohibition; No U-Turn	Each
605(2)r1	Regulatory Signs, 450mm, R4-1A(40), Speed Signs Speed Restriction (Maximum)	Each
605(2)ad1	Regulatory Signs, 400 x 600 mm, R5-10, Parking Signs Do Not Block Intersection	Each
605(2)ai1	Regulatory Signs, 450mm, R6-8A, Miscellaneous Signs Pedestrian Crossing	Each
605(2)ak1	Regulatory Signs, 450mm, R6-10A, Miscellaneous Signs Bike Lane Signs	Each

# Item 612 – Reflective Thermoplastic Stripping Material (Solid Form)

# 612.1Description

# Add the following paragraph:

This item of work shall consist of placing markings on the finished pavement and shall include sampling and packing, preparing the surface and applying the paint to the pavement surface, all in accordance with this Specification. Pavement markings will be reflective paints of thermoplastic materials unless directed otherwise, and shall be applied whenever required by the Engineer.

# **612.2Materials Requirements**

# Add the following paragraphs at the end of this subsection:

Reflectorized Thermoplastic - The material shall be in accordance with (a) above except that ballotini (glass

beads) shall be incorporated in the mixture during the manufacture of the thermoplastic material. The quality of ballotini included shall be between 13% and 22% by weight of the total mix and shall be counted as part of the aggregate. The ballotini material shall conform to the requirements on the next paragraph.

Reflectorized Thermoplastic with Ballotini Surface - The material shall be in accordance with (b) above except that a layer of ballotini shall be superimposed in the surface of the hot thermoplastic immediately after laying to give immediate reflectivity. The superimposed ballotini shall be of the same quality as the one incorporated in the reflectorized thermoplastic but may be smaller in size; not more that 20% shall pass a No. 70 U.S. sieve. Ballotini shall be applied at rate of 250-450 grams per square meter (0.8-1.5 ounces per square foot) such that the combined total of ballotini incorporated in and superimposed on the thermoplastic shall be between 20% and 26% by weight of the material.

# **612.3General Requirements**

# Add the following Subsections:

# **612.3.3Thermoplastic Pavement Markings**

- a. Preparation of Road Surface The material shall be applied only on surface which is clean and dry. It shall not be laid over the loose detritus, mud or similar extraneous matter, or over an old paint marking, or over an old thermoplastic marking which is faulty.
- b. Preparation of Thermoplastic Material The material shall be melted in accordance with the manufacturer's instruction in a heater fitted with a mechanical stirrer to give a smooth consistency to the thermoplastic and such the load overheating shall be avoided. The temperature of the mass shall be within the range specified and shall on no account be allowed to exceed the maximum temperature stated by the manufacturer. The molten material shall be used as expeditiously as possible and shall not be maintained in a molten condition for more than 4 hours.
- c. Laying Center lines, lane lines and edges lines shall be applied by approved mechanical means

and shall be laid to a regular alignment. Other markings may be applied by hand-screed, handpropelled machine or by self-propelled machine as approved or directed by the Engineer. After transfer to the laying apparatus the material shall be maintained at the right consistency for laying. In the case of screen application, the material shall be laid to a thickness of not less than 3 mm (approx. 1/8 inch) or more than 6 mm (approx. 1/4) unless specifically authorized by the Engineer. In all cases the surface produced shall be uniform and appreciably free from bubbles and streaks. Where the Contract Documents require, or the Engineer directs, that ballotini shall be applied to the surface of the markings, these shall be applied uniformly to the surface of the hot thermoplastic immediately after laying such that the quantity of ballotini firmly embedded and retained in the surface after completion complied with the requirements of Subsection 612.2.3(c).

Road markings of a repetitive nature, other center lines, lane lines, etc. shall unless otherwise directed by the Engineer be set out with stencils which comply with the size and spacing requirements shown on the Plans.

**d.** Re-use of Thermoplastic Materials - At the end of the day's work, the material remaining in the heater and/or laying apparatus shall be removed. This may be broken and used again provided that the maximum heating temperature has not been exceeded and that the total time during which it is in molten condition does not exceed the requirements of Subsection 612.3.3(b).

# 612.3.4Defective Materials or Workmanship

Materials, which are defective or have been applied in an unsatisfactory manner or to incorrect dimensions or in a wrong location shall be removed, the road pavement made good and the materials replaced, reconstructed and/or properly located, all at the Contractor's expenses and to the satisfaction of the Engineer.

# 612.3.5Protection of Traffic

The Contractor shall protect pedestrian, vehicle and other traffic adjacent to the working area against damage or disfigurement by construction equipment, tools and materials or by spatters, splashes and smirches of paint or other construction materials and shall during the course of the work provide and maintain adequate signs and signals for the warning and guidance of traffic.

# 612.4Method of Measurement

The quantities measured shall be paid for at the appropriate contract unit price for the pay items shown in the Bid Schedule which price and payment shall constitute full compensation for furnishing and placing all materials, sampling and packing, for the preparation of the surface and for all labor, equipment, tools and incidentals necessary to complete the work.

# 612.5Basis of Payment

Payment will be made under:

Pay Item Number	Description	Unit of Measurement
612(1)	Reflectorized Thermoplastic Pavement Markings, (White)	Square meter
612(2)	Reflectorize Thermoplastic Pavement Markings, (Yellow)	Square meter

# PART J

# **Roadway Lighting**

# PART J - ROADWAY LIGHTING

# Item 624 – Roadway Lighting

#### 624.1Description

The item shall consist of furnishing and installing the road lighting system as required by the Plans and as described in this Specifications. The work shall include the following:

- a. Electrical services, including all conduits, junction boxes, fittings, and underground cabling via duct-banks and hand-holes from the Electric Utility Company supply point to lighting distribution panel boards, and pole mounted luminaries.
- b. Lighting panels/ controllers
- c. Complete street lighting luminaries
- d. Lighting Standard poles and foundations
- e. Cable trenching, cable laying, excavation and backfilling

### **624.2Material Requirements**

#### 1. General Requirements

All materials and equipment shall be new and of the approved type by Underwriter Laboratories, (UL).

Road lighting power sources will be hybrid type, combination of conventional power source derived from the Substation's power transformer, 69Kv -13.8Kv voltage system. The connection from distribution equipment, outdoor type ring main unit (RMU), a rated step-down lighting transformer 50kva, 13.8kV- 400Y/230V, 3ph, 4w, 60 hz, voltage system are facility equipment under electric utility company (MERALCO). The distribution of power supply circuits from the pad mounted, outdoor type (LDP) Lighting Distribution Panel (all under contractor's scope of works) to road lighting pole mounted luminaires via underground buried cables through duct bank with 4" diameter HDPE conduit pipes. Along the duct bank routes, hand holes located approximately 250m apart are provided to facilitate the easy pulling of lighting cables in underground duct bank and location area for splicing between cables. While the other source of road lighting is through solar powered with battery packs- with 3 days back-up power supply.

#### **Fungus Control**

All electrical equipment and materials except otherwise specified shall be treated to resist moisture and fungus. Electrical components such as switches, breakers, fuses, contacts, and heater elements shall not be treated. Other materials and components, which are inherently fungus – resistant or protected by hermitically sealing, need to be treated.

All other circuit elements that have a temperature rise of not more than  $30^{0}$  C when operating at full load shall be coated with a fungus-resistant varnish. Circuit elements include but are not limited to cables, wires, contractors, panels, terminals and terminal junction blocks.

#### **Circuit Breakers**

The molded case circuit breakers (MCCB) shall be of the thermal magnetic type having 197

inverse-time tripping characteristics on overload and instantaneous trip on short circuits, shall be equipped with arc quenches, shall have quick-make and quick-break toggle mechanism, shall have trip-free operating handles. Each multi-pole breaker shall have a common trip so that an overload on one pole will automatically cause all poles of the breakers to open. The circuit breakers shall have an interrupting rating of not less than 10,000 (KAIC) symmetrical amperes at 400 volts.

### 2. Street Lighting Poles and Luminaries

#### Pole

Provide Road Lighting Poles designated for wind loading of 260 kph (kilometers per hour) determined in accordance with DPWH Standard and AASHTO LTS-2 while supporting luminaries having effective projected areas indicated. Poles shall be anchor base type designated for use with underground supply conductors. Galvanizing shall be in accordance with the requirements of ASTM A-120 for the poles and A-153 for the fittings. Effective height of poles shall be 10m high with mounting support arm length of 1.8m for median road and 6m with mounting support arm length of 1.0m at the center-island between sidewalk and bicycle lanes. Mast is a tubular type and round tapered, 4.5 mm in thickness for structural rigidity to remain stand upright against wind velocity of 260 km/hour plus the weight of light fixtures and solar panel mounting supports at center atop of steel pole.

All electrical light pole footings shall be reinforced concrete with dimensions as indicated on the Plans. Concrete shall be Class "A" and together with the reinforcing steel shall conform to the requirements of the Standard Specifications.

#### Luminaires (Hybrid Type)

Hybrid Type Luminaires–combination of conventional A/C power and DC source supplies comprises of solar panel/s and rated battery packs and AC-DC Hybrid controller. Selection of power sources is through the facility of changeover switch. Battery enclosure is located in separated u/g concrete hand-hole with cover closest as possible adjacent to pole foundation for specific maintenance access and ease of wiring connections.

Technical Specifications:

90Watts, LED Road Lighting, Operating Voltage 220-240 VAC, 100 lumens per watt or higher; 12,000 lumens; IP66; Lumen maintenance: 50,000 Hrs; Upgradeable Multi-layer Optics; UV treated; Thermally hardened tempered glass cover; NEMA Socket control unit, Auto Dimming Function with a dimming percentage of 50.00%; High pressure die-cast aluminum with heat management system; Power Factor: 0.95 or higher; Electrical Insulation: Class 1; Surge Protection: 10kV; Color Temperature: 3500k to 4000k Maintenance: Replaceable Gear Tray, upgradeable / replaceable LED modules, SPD and driver, tool less luminaire opening and gear tray change; Warranty: 5 years warranty for LED system (LED / driver /optics / luminaire).

For 40Watts, LED Road Lighting should be the same technical specification as given above.

Intelligent wireless Dimming Type Controller for AC/ DC Hybrid LED Solar street lights.

#### Solar Panel Specification;

250W maximum power for 250W Solar Panel, operating voltage of 36VDC, 6.95A operating current, IP65, 5% up to 95% humidity, with product warranty not less than 90%

in 10 years and 80% in 25 years.

150AH Battery Specification:

12V rated voltage, 150AH (10hrs. 1.8V/ cell at 25Degrees Centigrade, maximum charge current of 37.5 A, approx. weight of 42.2 kg., 483mmL X 170mmW, 240mmH dimensions, application for off-grid solar street lights. Battery pack and enclosure storage are placed in underground hand-hole closest as much as possible to pole foundation for ease of wiring connection between solar panel and battery pack. Battery cables and terminal connectors are provided with rated ampacity copper conductor.

Solar power Street Lighting Working Hours and Battery Autonomy;

For 2x 90W LED Light Fixtures- 12 hours total working time, 6 hours at 100% full power and 6 hours at 50% dim power with 3 days reserved power.

For 1x 90W LED Light Fixture- Same rating as the 2x 90W LED LF.

For 2x 40W LED Light Fixtures- 12 hours total working time, 6 hours at 100% full power and 6 hours at 50% dim power with 2 days reserved power.

As per the Electrical Drawings, Riser/Lighting Panel Wiring Diagram specified that the Roadway Luminaires can be manually controlled on individual circuit breaker; Road Lighting Control System are locally and with remotely controlled and monitored Options: Remotely controlled and monitored from Central Control Center Station or by mobile gadgets, the latest state of the art internet base network "CLOUD" mobile cellphone, tablet or laptop device equipment.

# Compliance with the Energy Efficient LED Streetlight Specifications and with the following LED Quality Industry Standards compliance requirements:

- 1. EN 61347-1: general and safety requirements;
- 2. EN 61347-2-13: particular requirements for DC or AC supplied electronic control gear for LED modules;
- **3.** EN 62384: DC or AC supplied electronic control gear for LED modules performance requirements;
- 4. EN 55015: 2006 and 2007-Limits and methods of radio disturbance characteristics of electrical lighting;
- 5. EN 61547: 1995/+A1: 2000- Equipment for general lighting purpose EMC immunity requirements;
- 6. EN 61000-3-2:2006 Limitation of harmonic current emission;
- 7. EN 61000-3-2:2008 Limitation of voltage fluctuation and flicker;
- 8. IEC 60598-1(Ed7) general requirements for luminaries, incorporating electric light sources for operation from supply voltages up to 1000V;
- 9. IEC 60598-2-3 (Ed 2) Electric Insulation Class I;
- 10. IEC 62471 photo-biological safety of lamps and lamp systems;

Compliance with the Test Reports and Certifications from laboratories that are accredited according to ISO/IEC 17025 and qualified for pertinent testing of LED products particularly for roadway lighting by a recognized national or regional accreditation body (ILAC/APLAC) and to be submitted prior to delivery of streetlights.

- 1. Technical Data of luminaire and driver.
- 2. LM-70 Test Report (for luminaire electrical/photometric properties);
- 3. LM-80 Test Report (for LED chip properties);
- 4. Lumen Depreciation Test Report at 1000, 2000 and 3000 burning hours;
- 5. IEC 60598 Test Report;
- 6. Vibration Test Report;
- 7. EMC Test Report;
- 8. Salt Spray Test Report;
- 9. Factory ISO Certificate (ISO 9001: 2008/ISO 14001: 2004/ISO 18001: 2007); and
- 10. Lux Meter Test Results.

# ENERGY EFFICIENT LED STREETLIGHT SPECIFICATIONS

### 1. LED Streetlight Luminaire Housing

The luminaire shall have a full die cast housing to provide adequate rigidity and strength and also ensure proper heat dissipation. The luminaire housing shall have separate Driver and LED lamp cavity to ensure cooler operation of LED lamps and good electrical separation.

The optical LED compartment shall have a thermally hardened glass cover and high quality silicon gasket system. The glass cover shall be tightly secured with the housing. The complete luminaire shall be rated for IP 66 (Ingress Protection). Control unit NEMA Socket for smart control system are located to each luminaire. Control system overview is shown on the reference drawing.

# 2. Optics

Specially designed lens system with unique inner and outer profile for high efficiency LED to ensure maximum spacing between the poles and cover higher road widths. Multi-layer optics designed to ensure adequate luminance and illuminance uniformity in the unlikely event of individual LED failure. The luminaire should offer choice of narrow beam, medium beam and wide beam light distribution.

The luminaire shall offer a composite system efficiency of at least 100 Lumen/Watt and a lumen package of no less than 12,000 lumens. The luminaire shall use high efficiency LED and optics system to achieve at least 50% energy savings compared to present High Pressure Sodium road-lighting system (including ballast).

# 3. Future Compatibility

The luminaire shall be fully compatible with future LED upgrades when they become available. It shall have a modular design to upgrade / replace with new LED modules or LED drivers at site. All electronic components/drivers shall be mounted on a separate gear tray with tool less access and replacement. The luminaire shall have space available inside for communications antenna or equipment to be integrated into the luminaire for future tele management

control system implementation. Evidence showing tele management capability shall be provided.

#### 4. Surge Protection

The proposed luminaire shall have an in-built 2-stage surge protection system to protect (1st stage) the electronic driver and (2nd stage) the LED module with a minimum surge protection rating of 10KV.

#### 5. Ingress Protection (IP) & Impact Resistance

The luminaire shall have full IP 66 protection to ensure long reliable performance and to minimize maintenance requirement and an Impact resistance of IK 08. No chemical glue is to be used as it may cause breakdown of water-proof and dust-proof seal.

### 6. Maintenance

The driver compartment cavity and gear tray shall be designed with tool less access for maintenance and replacement.

### 7. Mounting

The mounting of the luminaire will be in axial orientation through the double arm supports of 1.8m in length.

#### 8. Thermal Management

Managing thermal properties in LED luminaires are most critical to ensure optimum performance of LEDs and reliability of the system.

The housing shell under the circuit board (PCB) should be specially designed to ensure perfect contact between the board and the luminaire housing for efficient heat dissipation. The PCB shall be designed to maximize heat transfer and should be mounted on the housing using a highly efficient thermal interface material. Use of Silicon glue is not acceptable.

The housing over the Driver compartment cavity shall have adequate surface area to ensure fast heat dissipation.

# 9. Color Rendering Index and Color Temperature

The luminaire should have a minimum color rendering index (Ra) of 70+/- 10 and a color temperature of 4000K. The LED shall have a color consistency preferably within 5 SDCM at a maximum of 7 SDCM (standard deviation of color matching) as defined by McAdam. The color temperature variation of the LEDS should be restricted as per ANSI C78.377A with CCT variation limiting within 500K for nominal CCT of 4000K.

#### **10. Useful Life Hours**

The LED luminaire shall be designed for lumen maintenance of L70 or 70% at the end of useful life at ambient temperature of 35 degrees Celsius. The complete luminaire shall have a useful life of 50,000 burning hours. The luminaire including the driver will include a warranty of 5 years against

manufacturing defects.

#### 11. Standards Conformity

The luminaire should fully conform to the following specifications (please submit certificate or test report for each):

- IEC 60598-2-3 Part 2: Particular requirements: Sec. Three-Luminaires for road & street lighting
- 62471 Photo-biological safety of lamps and lamp systems
- IEC 62493 Assessment of lighting equipment related to human exposure to Electromagnetic Fields
- EN 55015: 2006 and 2007 Limits and methods of radio disturbance characteristics of electrical lighting.
- EN 61547:1995 / +A1:2000 Equipment for general lighting purpose EMC immunity requirements. EN 61000-3-2:2006 Limitation of harmonic current emission.
- EN 61000-3-3:2008 Limitation of voltage fluctuation and flicker.

#### 12. LED Driver Specifications

The LED driver shall be designed to operate large array of high power LEDs through current controlled output. The driver shall be suitable for nominal 220V-240V 50/60Hz mains supply.

The LED driver shall incorporate multiple control interfaces for dimming capability. It shall enable DALI, & 1-10V DC interface dimming control. It shall also have a programmable feature to allow pre-programming of step dimming lighting levels based on the ON time.

The LED driver shall fully conform to following specifications (please submit certificate or test report for each):

IEC61347-1 - General and safety requirements.

IEC61347-2-13 - Particular requirements for DC or AC supplied electronic control gear for LED modules.

IEC62384 - DC or AC supplied electronic control gear for LED modules

#### 13. Ambient Temperature

The luminaire shall be suitable for ambient temperature range of between -40 to 60 degrees Celsius. 3rd party IEC60598 Test Report shall be measured/corrected for Ta = 35 degrees Celsius.

#### 14. Lighting Simulation

To support and establish the performance of the luminaire relative to the road, a lighting simulation showing compliance to Luminance measurement of 1

cd/m2 should be submitted. Overall uniformity measurements shall not be less than 0.40.

#### a.) Conduit and Underground Duct Bank Raceway

PVC Conduit shall conform to ANSI Standards and for underground duct bank uses HDPE flexible pipe. For Fittings of types approved by the Engineer shall be provided as required for connection to junction, pull boxes, conduit spacers, and to concrete hand-holes located below ground and equipment.

#### **b.)** Insulated Conductors

Conductors in raceways shall be copper with moisture and heat-resistant rubber or thermoplastic insulation. Wires and cables shall be type THW with nylon jacket or XLPE type rated 600-1000 volts, 90 degrees for all wires. All types shall be PAS approved and shall conform to NEMA Standard Rubber Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy. Phelps Dodge brand or approved equal shall be used. For circuit ground wire, use TW type thermoplastic heat, moisture resistant and green insulated.

#### c.) Grounding Installation

All street lighting poles and panel boards shall be effectively grounded. Conductor and ground wires shall be bare copper as shown and sizes as indicated in the plans. All connections shall be mechanically and electrically sound and secured by insulating tape of approved type. Grounding wire shall be made of bare copper stranded, soft drawn wire and shall be installed in one continuous length without splices or joints.

Ground rods shall be made of copper-clad steel and shall be driven full length into the earth, sizes of which shall be as indicated on the plans for grounding details. Connection to the grounding rod shall be done exothermic weld.

#### d.) Backfilling Materials

Backfilling materials shall be a suitable materials free from any objectionable matters and approved by the Engineer.

#### **624.3**Construction Methods

#### 1. General

#### a. Codes and Regulations

All works shall be done in accordance with the requirement of the latest edition of the Philippine Electrical Code (PEC) and the National Safety Code (NSC), with the applicable ordinances of the local government, and with the requirements of the local power company that will eventually furnish the service. Nothing contained herein or shown on the plans shall be constructed as to conflict with the requirements of these codes, which are hereby made part of the work of this item.

#### b. Contractor Submittals

The Contractor shall be required to submit shop drawings which shall include outline dimensions, mounting connections and clearance, ratings, elementary wiring diagrams, interconnection wiring diagrams, together with catalogs and descriptive

data for the following:

- a. Lighting panels
- b. Streetlights, including lighting standard poles
- c. Smart Lighting Controller
- d. Manufacturer's Data.

When data that described more than one type, size, model, or item is submitted, clearly mark the data to indicate which type, size, model, or item is being provided. Data shall be sufficient to show conformance to specified requirements:

- 1. Luminaires
- 2. Lighting Standard Poles

#### c. Shop Drawings:

**Luminaires:** Include dimension, accessories and installation and construction details. Photometric data, including Zonal lumen data, average and minimum ratio aiming diagram and computerized candlepower distribution data shall accompany shop drawings.

**Poles:** Include dimensions, wind load determined in accordance with AASHTO LTS-1, pole deflection, pole class, and other applicable information and pole design calculations.

#### d. Certified Test Reports:

#### Luminaires:

Computerized horizontal illumination levels in foot-candles or lux at ground level, taken every 3 meters. Include average maintained foot-candle level and maximum ratio. Distribution data according to IES classification type of M-S-III as defined in IES Lighting Handbook. Luminaries not conforming to this standard are not acceptable.

#### 2. Test Guarantee

When the installation is reported as completed and ready for acceptance, the Contractor, at his own expense, in the presence of the Engineer, shall make test as directed.

The Contractor shall supply all apparatus, materials and labor required for making the tests.

The Contractor shall furnish a guarantee covering all labor and materials for a period of one year from the date of final acceptance of his work and he shall agree to repair and make good at his expense any and all defects which may develop during that time, if in the opinion of the Engineer such defects had raised from defective workmanship or materials.

#### 3. Installation

# a.) Lighting Panels

The Contractor shall install the panel boards at the locations in proper position as shown on detailed design drawing and shall be completely wired and ready for operation. All power and control wire and cables shall enter the control equipment enclosure bottom feed through conduit sleeves.

# b.) Conduit

Electrical conduits and fittings shall be installed in their correct positions and locations as shown on the plans. Conduit and fittings to be embedded in concrete shall be held securely in position while the concrete is being placed. All threaded conduit connections shall be painted with red lead sealing compound or glypical varnish.

All conduit bends shall be of standard radii bent without heating and shall be free from kinks, indentions, or other deformations, which reduce the cross-sectional area. Burrs and sharp edges at the end of each piece of conduit shall be removed with a taper reamer. Bend shall not exceed more than 4 quarter bend in laying conduit from boxes to boxes.

Bushing shall be installed on the ends of conduits at boxes or cabinets to protect conductors from abrasion, and locknuts and bond nuts shall be installed to provide tight grounded connections between conduits and boxes.

Conduits emerging from concrete surfaces shall be terminated with conduit coupling and pipe plugs as required.

During construction, ends of conduits shall be plugged or provided with sealing non-hardened material at all outlets or boxes to keep the conduits dry and prevent the entrance of moisture and foreign matters into the conduits.

Locknuts and bond nuts shall be installed to provide tight ground connections between conduits and boxes, control board and cabinets. The ends, if conduits are terminating at cabinets, control boards or outdoor boxes, shall be sealed with an approved sealing material to prevent air circulation from the conduit into the panel cabinet boxes.

# **c.)** Concrete Foundations

Comply with details for reinforcement and for anchor bolts, nuts, and washers. Verify anchor-bolt template by comparing with actual pole bases furnished.

# d.) Pole Installation

Use web fabric slings (not chain or cable) to raise poles. Mount pole to foundation with leveling nuts, and tighten top nuts to torque level recommended by pole manufacturer. Secure poles with level, plumb and square. Grout void between pole base and foundation. Use non-shrinking or expanding concrete grout firmly packed in entire void space. Use a short piece of 13mm diameter pipe to make a drain hole through grout.

#### e.) Luminaire Attachment

Fasten to indicate structural supports.

Lamp luminaries with indicated lamps according to manufacturer's written instructions. Replace malfunctioning lamps.

### f.) Field Quality Control

Testing and commissioning shall be in accordance with the manufacturer's recommendations.

Provide necessary testing tools and equipment and to include the following:

- Measurelightintensities at night if specific illumination performance is indicated. Use photometers with calibration referenced to NIST standards, or approved equal.
- Check intensity and uniformity of illumination.
- Check excessive noisy ballast.

### g.) Excavation and Backfilling

Prior to excavation, all necessary clearance shall be secured in advance for all underground facilities that can be found along cable trench.

Backfilling shall be done in approved manner using suitable excavated materials free from any objectionable matter and place in layers to be compacted thoroughly and evenly using mechanical tamper to a maximum density.

#### h.) Conduit under Roadway

Installation shall be such as to avoid pocket in the conduit run. All run shall be straight as possible and shall be installed in a neat and workmanlike manner. Conduits under roadway shall be encased in reinforced concrete.

#### i.) Electrical Conductors and Grounding

Electrical conductors and ground wires shall be furnished and installed by the Contractor. All insulating tape and compounds, solder, flux and connectors for making grounding connections shall be mechanically and electrically tight and secure.

All grounding connectors shall be furnished by the Contractor. The Contractor shall install electrical conductors and shall make all required connections as shown on wiring diagrams to be furnished or as directed by the Engineer. The conductors shall be installed so that there will be no cuts or abrasions in the insulations or protective covering of the conductor. No splices shall be made in conductors, except at boxes, outlets or cabinets.

#### 624.4Method of Measurement

The works under this item will be paid for each of the items provided in the Bill of Quantities. Payments shall be full compensation for all materials, labor, plant, equipment, tools and incidentals, including all necessary tests and electrical permits that may be required and all other incidentals necessary to complete the whole electrical lighting system installation and each individual luminaire as detailed in the project drawings.

# 624.5Basis of Payment

Payment shall be full compensation for furnishing, installation and placing all materials, including all labor, equipment, tools and incidentals necessary to complete the work prescribed in this Item.

Payment will be made under:

Pay Item Number	Description	Unit of Measurement
103(1)	Structure Excavation	Cubic Meter
624(2)a3	10-Meter-High with Double arm support bracket 1.8m long (road center island), with street light 2x 90W LED light fixtures, 2- 250W solar panel with complete solar panel steel bracket support, 4x 150AH Gel Batteries, 2- AC-DC Hybrid Controller, 1-DC 24V power supply, including anchor bolts, nuts and washers and connection wiring cables.	Set
624(1)b3	10-Meter-High with Single arm support 1.8m (road intersection), with 1x90W LED street light fixture, , 1-250W solar panel with complete solar panel steel bracket support, 2x 150AH Gel Batteries, 1- AC-DC Hybrid Controller, 1-DC 24V power supply, including anchor bolts, nuts and washers and connection wiring cables.	Set
624(2)c1	6-Meter-High with Double arm supports 1.0m (walk/ bike lanes), with street light 2x 40W LED light fixtures, 1- 240W solar panel with complete solar panel steel bracket support, 2x 90AH Gel Batteries, 1- AC-DC Hybrid Controller, 1-DC 24V power supply, including anchor bolts, nuts and washers and connection wiring cables.	Set
624(4)	Conductors and Cables (Underground Electrical Works)	
	Supply and install Conductors and Cables complete with necessary accessories with testing and commissioning as shown on drawings and as described on specifications to make the system operational.	
624(4)a	Lighting Power Cable, XLPE/PVC, 90 Degrees C, rated 600-1000v, 4/c 10 mm2	Linear Meter
624(4)b	Lighting Power Cable, XLPE/PVC, 90 Degrees C, rated 600-1000v, 4/c 16 mm2	Linear Meter
624(4)c	Lighting Power Cable, XLPE/PVC, 90 Degrees C, rated 600-1000v, 4/c 50 mm2	Linear Meter
624(5)	Grounding and Bonding (Underground Electrical Works)	
	Supply and install Lightning Protection and Grounding System complete with testing and commissioning and necessary accessories as shown on drawings and as described on specifications to make the system operational.	

624(5)a	Ground wire, green PVC insulated, Building wire 1/c 6 mmm2	Linear Meter.
624(5)b	Ground wire, green PVC insulated, Building wire, 1/c 16 mm2	Linear Meter
624(5)c	Ground wire, bare copper, 10 mm2	Linear Meter
624(5)d	Ground Rod, 20mm dia. X 3m long copper clad	Each
624(6)	Conduit / Raceway / Fittings Main Feeder Distribution System	
624(6)a	HDPE, 100mm dia. Flexible Pipe	Liner Meter.
624(6)b	PVC, 50 mm dia.	Liner Meter
624(6)c	PVC, 25 mm dia.	Liner Meter
624(6)d	Elbow 90 degrees x 50mm dia. PVC	Each
624(6)e	Elbow 90 degrees x 25 mm dia. PVC	Each
624(6)f	Coupling, PVC 50mm dia.	Each
624(6)g	Coupling, PVC 25mm dia.	Each
624(7)	Lighting Distribution Panelboard (Low Voltage) (Lighting Control Panel)	
	Supply and install Enclosed Cabinet with MCB & BCB complete with testing and commissioning, supports, fittings, adapters, boxes and necessary accessories as shown on drawings and as described on specifications to make the system functioning. Accessories as shown on drawings and as described on specification to make the system operational.	
624(7)a	LDP-1, 100 AT/ 225 AF, 3Ph, 4W, 400Y/230 V, 60 Hz, 10 KAIC, Main Circuit Breaker with the following Branch Circuit Breakers (12 ways 3ph CB) 12- 20 AT/ 100AF, 3Ph, BCB, with ground connection facility in NEMA 3R Enclosure, Pad Mounted, Bottom feed for Incoming/Outgoing feeder cables	Set
624(7)b	LDP-2, 100 AT/ 225 AF, 3Ph, 4W, 400Y/230 V, 60 Hz, 10 KAIC, Main Circuit Breaker with the following Branch Circuit Breakers (18 ways 3ph CB) 18- 20 AT/ 100AF, 3Ph, BCB, with ground connection facility in NEMA 3R Enclosure, Pad Mounted, Bottom feed for Incoming/Outgoing feeder cables	Set

624(7)c	LDP-3, 100 AT/ 225 AF, 3Ph, 4W, 400Y/230 V, 60 Hz, 10 KAIC, Main Circuit Breaker with the following Branch Circuit Breakers (12 ways 3ph CB) 12- 20 AT/ 100AF, 3Ph, BCB, with ground connection facility in NEMA 3R Enclosure, Pad Mounted, Bottom feed for Incoming/Outgoing feeder cables	Set
624(8)	Concrete Encasement (Reinforced)	
624(8)a	Electrical Hand holes (for cabling routes)	Each
624(8)a.1	Battery Hand holes	Each
624(8)b1	Duct Banks (Concrete Encasement), 10.0M Single and Double Arm Pole for Road Crossing	Linear Meter
624(8)b2	Duct Banks (Concrete Encasement), 6.0M Double Arm Pole for Road Crossing	Linear Meter
624(8)b3	Duct Banks (Direct Burial), 10.0M Single and Double Arm Pole for Non-Road Crossing	Linear Meter
624(8)b4	Duct Banks (Direct Burial), 6.0M Double Arm Pole for Non-Road Crossing	Linear Meter
624(8)c1	Foundation Pad (Street Lighting Poles, 10.0M High Double Arm Support)	Each
624(8)c2	Foundation Pad (Street Lighting Poles, 10.0M High Single Arm Support)	Each
624(8)c3	Foundation Pad (Street Lighting Poles, 6.0M High Double Arm Support for 50M ROW)	Each
624(8)c4	Foundation Pad (Street Lighting Poles, 6.0M High Double Arm Support for 39M and 41.5M ROW)	Each
624(8)d	Foundation Pad (Lighting Distribution Panelboard)	Each

# PART K

# **Street Landscape**

# PART K - STREET LANDSCAPE

#### Item SPL1200 – STREET LANDSCAPE

#### SPL1200.1 Description

This section includes the furnishing of all Trees and Shrubs, irrigation system, tools, equipment and materials as required for Street Landscape.

#### SPL1200.2 Softscape Components

#### **Scope of Works**

The scope of work in this section shall include but not be limited to the following:

- a. Planting of Trees and Shrubs
- b. Maintenance of landscape area

#### **Quality of Workmanship and Materials**

- a. All materials and workmanship shall be of the highest standards and quality demanded by this specification. Substandard work and materials identified by the Installer's cost.
- b. All plant materials shall be of the genus, species and variety specified and substitutions shall not be permitted unless authorized in writing by the Engineer.
- c. All trees and shrubs installed by the Plant Installer shall be free of pest, disease, discoloration and damage. Plants shall be well branched with vigorous shoots. The root systems of each plant shall contain a good proportion of fibrous roots.
- d. All materials are to be approved by the by the Engineer prior to use on site. Materials shall be obtained from approved sources, manufacturers and/or suppliers.
- e. Where particular products are specified and the Plant Installer wishes the use of similar products from other suppliers, prior confirmation in writing shall be obtained from the Engineer.

#### **Supply of Softscape Materials**

- a) The Engineer reserves the right to make field adjustments and reasonable substitutions to ensure implementation of the landscape concept in relation to field conditions.
- b) The Contractor shall submit his proposed construction program based on the criteria of the Master Program showing the intended sequences, stages, and order of proceeding with the works together with the period of time he has estimated for each and every stage of progress.

- c) The Contractor shall liaise with other subcontractors at each phase to program and execute the works.
- d) The Contractor shall complete the works on or before the date of completion as set forth in the Contract.
- e) All work carried out must be done in accordance with the relevant Code of Practice as stipulated by the relevant Government and Statutory bodies.
- f) The Contractor shall undertake all responsibility for defects and maintenance to the landscape for a period of twelve (12) months from the date of practical completion.
- g) It is essential therefore that the Contractor is fully conversant with the techniques set out in this specification and is adequately prepared with the trained management, supervisors, foreman and labor force as well as tools, equipment and materials to complete the works to the specifications.
- h) The Contractor shall not use different techniques or quality criteria or materials unless the alternative system has been approved in writing by the Engineer. No cost increased for alternative specifications will be entertained unless formally submitted in writing as an improvement in the quality of a product and accepted in writing following the Client's/Owner's approval, through the Engineer.
- i) The Contractor is to study the drawings at the time of tender and notify the Engineer of any discrepancy at the time of tender submission.
- j) On completion of the works, the Contractor shall prepare a set of as-built drawings covering the areas installed. These drawings shall be at the same scale as the original planting plans and shall contain the accurate positions of all planting with the actual number of plants installed. These drawings and the quantities shall be approved by the Engineer.
- k) The general description of the works mentioned above is only for the guidance of the Contractor and any error or omission shall not constitute a ground for claim by the Contractor.

#### **Backfill and Growing Media**

Materials for backfilling and planting holes and beds shall consist of approved quality topsoil transplanted to the site and thoroughly mixed with sand, organic compost and coco peat. The Plant Installer must submit samples for approval of the Engineer.

The soil mix compositions are as follows or other growing mix as specified by Landscape Architect:

Planting on Grade		Planter Boxes on concrete slab decks		
Loamy topsoil	50%	Loamy topsoil	30%	
White washed sand	10%	White washed sand	10%	
Soil Conditioner	10%	Soil Conditioner	7.5%	

Sugarcane waste soil	6%	Vermicu	lite	7	7.5%
Rice hull	6%	Perlite		16%	0
Coconut fiber	6%	Charcoal	5%		
Bagasse	6%	Sugarcane v	vaste soil	6%	
Chicken manure (compost	ed) 6%	Rice hull			6%
Coconut fiber	6%	Bagasse	6%		
Chicken manure(composted) 6%					

### Soil Mix

For soil mix, submit a written statement to the Engineer by delivery, stating location of soil source and chemical analysis of soil samples including pH, percentage of soluble salts, and amount of potassium, phosphorus and nitrogen.

Mechanical Analysis of topsoil will determine conformance percentage of sand, silt, clay and organic matter.

#### Samples of Materials

2 soil aggregate types	-	2 liters each
2 drainage aggregate types -		2 liters each
Soil conditioner	-	2 liters each
Mulch	-	2 kg bag
Fertilizer	-	1 liter plus manufacturer's label
Anti-Transpirant Spray	-	500 ml plus manufacturer's label

### Top Soil

Soil composition for turfed areas shall be 70% sandy loam, 20% sand (washed), and 10% organic compost (as outlined).

- a. Shall be fertile natural red/brown topsoil transported to the site, free from stones, clay, wood and sod, and obtained from naturally well-drained area. Topsoil shall neither be excessively acidic nor have high alkalinity, and shall be free from any toxic matter liable to be harmful to plant growth. The pH for topsoil shall be in the range of 5.5-6.5.
- b. Topsoil shall generally be reasonably loose in a form containing not more than 10-15% of moisture content. Topsoil delivered in a wet and soggy condition will be rejected by the Engineer.
- c. Topsoil depth in designated planting areas shall be as follows:
- 1. Lawns and Sodded Areas 0.15cm
- 2. Ground Cover Areas 0.30 cm
- 3. Shrubbery Areas 0.60 cm
- 4. Trees
  Shall conform with the size of the root ball. Allow 0.30 minimum dimension from tree root ball edge to rim of prepared excavation.

Depth of pit excavation shall have a minimum of 0.60 cm. Allow 0.30 cm soil pedestal to prevent balled tree from settling. Actual pit depth shall be determined by the existing root ball dimensions. Refer to tree planting details.

### Soil Conditioner

Shall be peat moss, coco peat, ground bark, well composted chicken manure, bagasse, sugarcane (mud) waste/pulp or other approved fibrous organic matter suitable for mixing with topsoil to make a friable growing medium for plants, resistant to rapid decay, free of soluble salts below 900 ppm, pH 6-6.5, free of large lumps or debris.

# Lightweight Aggregate

Shall be an approved low-density, inert material such as charcoal, expanded shale or porous volcanic stone free from dust and debris, pH 6-6.5, free of soluble salts.

# **Organic Compost**

Shall be an organic vegetable compost e.g. tree bark compost produced by a thorough horticultural or industrial composting progress. Compost is to have a clean, under composed smell free from any rotting substances, debris, refuse, clay or visible fungus. A sample and test data is to be submitted before being packed for transport and odorous materials used on site will be rejected. Any vermin resulting in use of organic compost will have to be controlled by the Plant Installer within 12 hours of any infestation.

# Soil Analyst's Test Reports on Mechanical Analysis of Soil Mix

Shall be clean, coarse-grained and angular material with a minimum 1mm diameter section. It shall be well-graded, free from soluble salts ranging in size so that 80-100% passes the 3mm sieve and 0-50% passes the 2mm sieve, with 0% passing through a 1mm sieve.

# Fertilizer and Lime

- a. Fertilizer used shall be complete food having an N: P: K formulation of 15:15:15 for foliage plants and trees, and 12:12:17:2 for flowering plants. The Contractor shall also provide an approved basic fertilizer (slow release fertilizer) for every plant that is being potted and reported. The nutrients in the fertilizer must be freely available to the plants and all fertilizer must be delivered in original, unopened containers, bearing the manufacturer's guaranteed analysis.
- b. Triple Superphosphate 0-46-0 uniform in composition delivered to the site in unopened containers, each fully labeled, conforming to the applicable fertilizer laws, and bearing the name or mark of the manufacturer.
- c. Ground dolomitic limestone not less than 85% total carbonates, minimum 20% calcium and 10% magnesium. Ground so that 50% passes through the 250 microns sieve materials will be acceptable and the specified rates of

application are increased proportionally on the basis of quantities passing through the 250 microns sieve.

#### Mulches

Coarse, ground organic materials such as coco peat, or other approved available organic matter free from soluble salts and with a pH between 5.07.0.

#### SPL1200.3 Plant Materials

#### Nomenclature

Names of varieties conform to names generally accepted in the nursery trade.

#### Quality and Size

- a. Provide plants grown in approved nursery, acclimatized not fertilized for a period of at least four months before delivery. Habit of growth that is normal for the species, sound, healthy, vigorous and free from insects, diseases, injuries, abrasions, sunscald, disfigurement.
- b. Plants shall be grown or established in containers in which they will be delivered for at least six months but not more than twenty-four months in advance or final planting.
- **c.** Trees shall be well-formed with uniform branching. There shall be no abrasion of the bark, and no fresh cuts of limbs over 30 mm which have not completely callused over.
- d. Trees larger in size than specified may be used but increase in price is as limited by the contract documents. It is the responsibility of the Plant Installer to ascertain that materials larger in size than that specified can be accommodated in the proposed locations.

#### Plants Required

The species, size, manner in which to be furnished, and indication of the approximate number to complete the planting plan are given in the plant list.

#### Substitution

- a. Plants of kinds other than those named in the plant list will not be accepted unless specifically approved in writing by the Engineer. Proposed substitute, in each case, must possess the same essential characteristics as the type of plant actually specified in regard to appearance, ultimate height, shape, habit of growth and other requirements. Where a substitution is approved for the Contractor's convenience, plants of greater value may be accepted without additional cost to the Employer.
- b. The Contractor shall be present during inspection.

c. Make a written request to the Engineer, a minimum of thirty working days in advance of all inspections at the nursery. List the particular plants which are to be inspected as well as the size of the plants.

### Special Guarantee

All plant materials furnished under this Section shall be guaranteed for a period of one year from Completion as to the species, hybrid, flower color and/or variety specified herein or on the drawings. If after the issue of the completion certificate for the Main Contract by the Engineer, any guaranteed plant material proves to be of different species, hybrid, flower color and/or variety not initially determined, the Contractor shall replace that plant with a new plant of the originally specified species, hybrid, flower color and/or variety.

# **Minor Materials**

Accessories or other materials not described but required for completed work shall conform to commonly accepted industry standards and shall be of types of sizes best suited for the intended purpose and related conditions such as using a plastic plant separator for separating lawn from shrubs and planting from grade and other purposes. The Contractor is required to submit samples to the Engineer for approval, before installation.

#### Installation

#### Acclimatization

Local practice will dictate the percent shade that should be provided during this acclimatization period. Light levels listed in the schedule of plant materials represent the approximate condition that the plant will be provided when it is installed in the building and not the light level that should be produced during the first stage of acclimatization when the plant is grown under shade before installation.

#### Planting

- a. Planting shall be performed in accordance with the recognized best horticultural practice.
- b. All plants must come with pots or plastic bags in which they were originally grown and established in the nursery.
- c. All plants are to be removed from their original growing receptacles prior to installation. They should be arranged in a manner such that the leaves complement each other and are within touching distance of the other and not overlapping one another unless specified to the contrary.
- d. All planting works shall have the appearance of established growth. Plants shall be arranged with their foliage showing off their best face so that the intended design will be fully realized.
- e. Plants shall be set plumb and at such a level or elevation to level surrounding ground as they bore to ground from which they were dug. All plants shall be
planted on and in soil mix. The soil mix will be properly compacted before the placement of trees with a heavy root ball.

- f. Earth balled and hessian covered plants shall have all cloth, ropes, etc. removed from the tops of the earth balls but no cloth shall be pulled out from under the earth balls.
- g. In planting beds designated, deposit planting mix to full required depth as shown on the drawings. Deposit enough material to allow for settling and compaction. Compact by hand tamping and rolling. Do not compact by puddling. After soil is spread and compacted and just before planting, moisten evenly to full depth with a fine water spray. Place additional planting mix as necessary, to correct any settling occurring at this time.
- h. Bare-rooted plants are not acceptable.
- i. Disturbance to the root system or ball or earth shall be prevented in removing plants from containers. Root bound plants shall not be planted.
- j. After placing the plant, the plant pit shall be back filled with planting soil mix placed in layers and tamped firmly to eliminate air-void, minimize settlement and provide stability for the plant. A watering ring should be made out of the soil around the plant to store water.
- k. During and after planting, the plants shall be thoroughly watered to eliminate air voids around the roots and watered regularly as required for the planting to become established.
- 1. All saplings shall be securely staked and tied.
- m. All semi-matured instant trees and palm shall be staked by guying or by ground anchors as specified
- n. Trees of the species and of the size specified on the plans shall be planted in locations shown. Trees shown on plans at spacing shall be accurately and evenly spaced in true lines.
- o. Shrubs shall be positioned in the location and numbers shown on plan and placed to achieve even spacing and proper matching of shapes related in a random fashion of approximately equal centers to obtain a natural dense cover.
- p. Groundcover plants and all potted plants shall be planted with a hand trowel to firm soil around roots.

### Staking

a. Provide all necessary support for plant material as required, such as posts and line wires for tree and tall shrub planting, stakes or tripods for tall tree sand palms, using durable materials which will remain in good condition for the duration of the contract.

- b. Stakes for supporting trees shall be sound wood, uniform in size, reasonably free of knots and capable of standing in the ground for at least one (1) year. Stakes for supporting trees, two meters tall and over shall be 50mm and not less than 2.5 meters in length.
- c. Wire for tree bracing and guying shall be pliable 12 to 14 gauge (2.0-2.8mm) galvanized soft steel wire.
- d. Ground anchors shall be 25mm diameter GI anchors or equivalent. Hose shall be two-ply fiber bearing garden hose, not less than ½" (1cm) inside diameter.
- e. Wrapping material shall be first quality, heavy waterproof crepe paper manufactured for this purpose, or first quality burlap not less than 15cm nor more than 25cm wide of suitable strength and manufactured for this purpose.

### **Maintenance Operations**

- a. The Contractor is responsible to water and spray water to remove dust in all plants regularly. All the external plants shall be watered twice daily in the absence of sufficient natural rainfall.
- b. Weeding all weeds found growing in the landscaped area under maintenance must be removed. All plant beds must be weeded weekly.
- c. Forking all plant beds must be forked fortnightly to loosen the soil and provide sufficient aeration for the roots.
- Pruning plant shoots must be pruned when necessary. All trees, palms, d. shrubs and groundcovers shall be pruned by thinning out and shortening branches to the extent of 1/3 of the existing growth. Trees shall be pruned if dead, rotten or crossed branches are present or to maintain a clear stem up to the specified height using the methods described below. Allowances are to be made for all shrubs and climbers to be pruned at least twice during the Maintenance Period to promote bushy growth and good flowering characteristics. The shrubs shall be checked and all dead wood, broken, damaged or crossed branches shall be cut back, depending on species. Allowances must be made for the regular pruning of dead and dving plant parts. Pruning and removal of branches are to be carried out using sharp and clean instruments to give a clean, sloping cut with one flat face. Ragged edges of bark or wood are to be trimmed with a sharp knife. Dead wood and broken or badly bruised branches shall be removed. Main leaders shall not be cut. Pruning shall be done with clean and sharp tools to produce a clean cut face.
- e. Topdressing/ Mulching plant with exposed root planting beds and turfing with low topsoil level and those affected by rainwater splashing and erosion shall be top dressed a minimum of every three months or as instructed. A mulch can reduce the amount of water loss through surface evaporation, weed generation and soil erosion. All planting beds must be mulched with coco peat with a minimum depth of 75mm every three months or as instructed. Mulch should not touch the stem of a plant or cover the foliage in any situation.

- f. Spraying of plants all foliage and flowering plants must be sprayed with a fungicide, miticide and an insecticide once every two weeks or as directed by the Landscape Architect. Trees are to be sprayed with the proper pesticide when required.
- g. Fertilizing of plants slow release of NPK (nitrogen, phosphorus, potassium) combined with fast release organic fertilizer shall be applied regularly to ensure healthy growth, repeating the application once every four to six weeks. All trees, foliage and flowering plants are to be given fertilizer according to the following dosage, fertilizer type:

### (A) Trees/Palms (NPK - 15:15:15)

Application Rate
2 kg/plant per year in two applications
• 1 kg each time
4 kg/plant per year in three applications
• 1.3 kg each time
6 kg/ plant per year in three applications
• 2 kg each time

The Contractor shall put manure on every tree each month with slow releasing fertilizer, recommended and approved by the Engineer.

### (B) Shrubs/ Climbers/ Foliage/ Groundcovers

Height of Plants	Application Date	Remarks
1 m ht	35g/plant per month	NPK: 15:15:15
1-1.5 m ht	50g/plant per month	and 1-12:12:17
1.5 m ht	65g/plant per month	as and when
		Directed
Flower bed	70g/meter per month	by the Engineer

- h. Replacement of Plant all poor conditioned, dying and dead plants and turf not growing properly are to be replaced by healthy plants of the same species as specified and size of those adjacent in the planting area during the maintenance period at the Contractor's expense.
- i. Maintenance of Turf After Laying:
- j. The Contractor shall remove and replace any portion of turfed area where the turf fails to become established within thirty days of turfing.
- k. The Contractor shall regularly maintain all turfed areas in a neat manner by watering, moving, ranking and clipping during the whole of the Maintenance Period. All turfed areas shall be moved after one month of completion of turfing, and thereafter at maximum intervals of three weeks.
- 1. About one month after planting, the grass shall be applied with manure with a complete chemical fertilizer which supplies Nitrogen, Phosphorus, Potassium and Magnesium approximately in the following proportion 18:12:6:3. This shall be applied at rate of 125 kg/ha of grass after all weeds have been removed. The

fertilizer shall be mixed with the topdressing and spread evenly over the field. This application shall be repeated after three months.

### Clean-up

- a. The Contractor must ensure that all plant beds are tidied up and free from any debris or unapproved plant materials immediately on completion of the planting works.
- b. All areas affected by horticulture activities must be thoroughly cleaned of soil stains, etc. removed to the satisfaction of the Engineer.

### **Final Planting Inspection and Acceptance of Works**

- a. Final inspection for acceptance shall be made at the conclusion of maintenance period provided that all the projects improvements and corrective work has been complete. If improvements are not complete, maintenance shall be continued until completion of such work.
- b. Written notice requesting final inspection shall be submitted by the Contractor to the Engineer at least fifteen (15) days before the anticipated date of completion.
- c. Prior to handing over of the work at contract completion and at the end of the Maintenance Period, all plants must be groomed and neatly trimmed to show off their best for the purpose of inspections.

### SPL1200.4 Landscape Irrigation System

Pipes for the landscape irrigation system shall be PVC Class 150 conforming to the following standard requirements:

- a. Longitudinal Reversion (ISO 2505) -5% max after 1 hour at  $150^{\circ}$ C
- b. Resistance to Acetone (ISO3472) No sign of delamination or disintegration after 2 hours of immersion.
- c. Resistance to External Blows (Impact Test ISO 3127) -
- d. Flattening (ASTM D2241) No evidence of splitting, cracking or breaking when flattened to 40% of the outside diameter
- e. Hydrostatic Pressure (ISO 1167) Burst Pressure pipe shall withstand 4.56 Mpa for at least 60 seconds without failure, and Short Term Pressure pipe shall withstand 4.30 MPa for at least 1 hour without failure.

The Contractor shall supply and install booster pumps in enclosed housing situated at locations shown in the Drawings. The Contractor shall prepare the floor plan of the housing and installation details of the booster pump for approval by the Engineer prior to construction.

Booster pump shall conform to the following requirements:

- a. Booster pump no. 1
  - Power 25Kw

- Head 68 m
- Discharge 24 liter per second
- Pump Speed 3600 rpm
- Stage -2
- Bore 100 mm
- 220 V, 60 Hz, VFD
- b. Booster pump no. 2
  - Power 22Kw
  - Head 67 m
  - Discharge -0.18 liter per second
- Pump Speed 3600 rpm
- Stage -2
- Bore 100 mm
- 220 V, 60 Hz, VFD

### SPL1200.5 Method of Measurement

The quantities measured shall be paid for at the appropriate contract unit price for the pay items shown in the Bid Schedule which price and payment shall constitute full compensation for supply and furnishing and placing of all planting materials (including soil, transporting and packing, for the preparation of the landscape), for the supply and furnishing and installation of pipe system and for the supply and furnishing and installation of booster pump with housing, including all labor, equipment, tools, and incidentals necessary to complete the works.

### SPL1200.6 Basis of Payment

Payment will be made under:

Pay Item Number	Description	Unit of Measurement				
Tree Planting	Tree Planting					
SPL1200(a)1	Dita, 2000 – 3000 mm ht., 1" to 2" cal. Min.	Each				
SPL1200(a)2	Aunasin, 2000 – 3000 mm ht., 1" to 2" cal. Min.	Each				
SPL1200(a)3	Antipolo, 2000 – 3000 mm ht., 1" to 2" cal. Min.	Each				
SPL1200(a)4	Malabulak, 2000 – 3000 mm ht., 1" to 2" cal. Min.	Each				
SPL1200(a)5	Salinbobong, 2000 – 3000 mm ht., 1" to 2" cal. Min.	Each				
SPL1200(a)6	Golden Shower, 2000 – 3000 mm ht., 1" to 2" cal. Min.	Each				
SPL1200(a)7	Pink Shower, 2000 – 3000 mm ht., 1" to 2" cal. Min.	Each				
SPL1200(a)8	Balitbitan, 2000 – 3000 mm ht., 1" to 2" cal. Min.	Each				
SPL1200(a)9	Katmon, 2000 – 3000 mm ht., 1" to 2" cal. Min.	Each				
SPL1200(a)10	Dao, 2000 – 3000 mm ht., 1" to 2" cal. Min.	Each				
SPL1200(a)11	Dapdap, 2000 – 3000 mm ht., 1" to 2" cal. Min.	Each				
SPL1200(a)12	Amugis, 2000 – 3000 mm ht., 1" to 2" cal. Min.	Each				
SPL1200(a)13	Milendres, 2000 – 3000 mm ht., 1" to 2" cal. Min.	Each				
SPL1200(a)14	Ipil, 2000 – 3000 mm ht., 1" to 2" cal. Min.	Each				
SPL1200(a)15	Bani, 2000 – 3000 mm ht., 1" to 2" cal. Min.	Each				

SPL1200(a)16	Narra, 2000 – 3000 mm ht., 1" to 2" cal. Min.	Each
SPL1200(a)17	Molave, 2000 – 3000 mm ht., 1" to 2" cal. Min.	Each
SPL1200(a)18	Siar, 2000 – 3000 mm ht., 1" to 2" cal. Min.	Each
SPL1200(a)19	Bagalunga, 2000 – 3000 mm ht., 1" to 2" cal. Min.	Each
SPL1200(a)20	Banuyo, 2000 – 3000 mm ht., 1" to 1" cal. Min.	Each
SPL1200(a)21	Balakat, 2000 – 3000 mm ht., 2" to 2" cal. Min.	Each
Sidewalk Planting	, , , , , , , , , , , , , , , , , , ,	
Shrub		
SPL1200(b)1	Fukien Tea, 600 mm ht., well-rooted, well shaped	Each
SPL1200(b)2	Akapulko, 800 mm ht., well-rooted, well shaped	Each
SPL1200(b)3	Garden Croton 500 mm ht well-rooted well shaped	Each
SPL1200(b)4	Gold Dust Croton 500 mm ht well-rooted well shaped	Each
SPL1200(b)5	Red Hookwood 450 mm ht well-rooted well shaped	Each
SPL1200(b)6	Golden Dewdron 400 mm ht, well-rooted, well shaped	Each
SPI 1200(b)7	Picara 300 mm ht_well-rooted_well shaped	Each
SPI 1200(b)8	Golden Bush 500 mm ht_well-rooted, well shaped	Each
SPI 1200(b)0	Variageted Gumamala 600 mm ht well rooted well	Each
51 £1200(0)9	shaped	Lach
SPL1200(b)10	Yellow Gumamela, 600 mm ht., well-rooted, well shaped	Each
SPL1200(b)11	Red Lantana, 600 mm ht., well-rooted, well shaped	Each
SPL1200(b)12	Beach Hymenocalls, 600 mm ht., well-rooted, well shaped	Each
SPL1200(b)13	Yellow Lantana, 300 mm ht., well-rooted, well shaped	Each
SPL1200(b)14	Red Lantana, 300 mm ht., well-rooted, well shaped	Each
SPL1200(b)15	Pink Lantana, 300 mm ht., well-rooted, well shaped	Each
SPL1200(b)16	Purple Lantan, 300 mm ht., well-rooted, well shaped	Each
SPL1200(b)17	Kamuning, 800 mm ht., well-rooted, well shaped	Each
SPL1200(b)18	Fragrant Pandan, 500 mm ht., well-rooted, well shaped	Each
SPL1200(b)19	Forget-me-not, 500 mm ht., well-rooted, well shaped	Each
SPL1200(b)20	Maki, 800 mm ht., well-rooted, well shaped	Each
SPL1200(b)21	Green Scheffera, 500 mm ht., well-rooted, well shaped	Each
Lawn and Groundcov	er	
SPL1200(c)1	Peanut Plant, rooted cuttings	Each
SPL1200(c)2	White Pugon, 200 mm ht., well-rooted, well shaped	Each
SPL1200(c)3	Dwarf Pandan, 200 mm ht., well-rooted, well shaped	Each
SPL1200(c)4	Moses-in-the-cradle, 200 mm ht., well-rooted, well shaped	Each
Median Planting		
Shrub		
SPL1200(d)1	Red Bougainvilla, 500 mm ht., well-rooted, well shaped	Each
SPL1200(d)2	Pink Bougainvilla, 500 mm ht., well-rooted, well shaped	Each
SPL1200(d)3	Purple Bougainvilla, 500 mm ht., well-rooted, well shaped	Each
SPL1200(d)4	Yellow Bougainvilla, 500 mm ht., well-rooted, well shaped	Each
SPL1200(d)5	White Bougainvilla, 500 mm ht., well-rooted, well shaped	Each
SPL1200(d)6	Fookien Tea, 600 mm ht., well-rooted, well shaped	Each
SPL1200(d)7	Garden Croton, 500 mm ht., well-rooted, well shaped	Each
SPL1200(d)8	Gold Dust Croton, 500 mm ht., well-rooted, well shaped	Each
SPL1200(d)9	Red Hookwood, 450 mm ht., well-rooted, well shaped	Each
SPL1200(d)10	Golden Dewdrop, 400 mm ht., well-rooted, well shaped	Each
SPL1200(d)11	Variegated Gumamela, 600 mm ht., well-rooted, well	Each
	shaped	
SPL1200(d)12	Yellow Gumamela, 600 mm ht., well-rooted, well shaped	Each
SPL1200(d)13	Red Gumamela, 600 mm ht., well-rooted, well shaped	Each
SPL1200(d)14	Red Santan, 400 mm ht., well-rooted, well shaped	Each
SPL1200(d)15	Yellow Santan, 400 mm ht., well-rooted, well shaped	Each

SPL1200(d)16	White Santan, 400 mm ht., well-rooted, well shaped	Each
SPL1200(d)17	Yellow Lantana, 300 mm ht., well-rooted, well shaped	Each
SPL1200(d)18	Red Lantana, 300 mm ht., well-rooted, well shaped	Each
SPL1200(d)19	Pink Lantana, 300 mm ht., well-rooted, well shaped	Each
SPL1200(d)20	Purple Lantana, 300 mm ht., well-rooted, well shaped	Each
SPL1200(d)21	Texas Ranger, 500 mm ht., well-rooted, well shaped	Each
SPL1200(d)22	Kamuning, 800 mm ht., well-rooted, well shaped	Each
SPL1200(d)23	Donya Luz, 800 mm ht., well-rooted, well shaped	Each
SPL1200(d)24	Donya Aurora, 800 mm ht., well-rooted, well shaped	Each
SPL1200(d)25	DonyaTrining, 800 mm ht., well-rooted, well shaped	Each
SPL1200(d)26	Forget-me-not, , 500 mm ht., well-rooted, well shaped	Each
SPL1200(d)27	Maki 1, 800 mm ht., well-rooted, well shaped	Each
SPL1200(d)28	Acapulco, 800 mm ht., well-rooted, well shaped	Each
Water Pipeline for La	ndscape	
Water Transmission	-	
SPL1200(e)1	PVC Pipe, 200 mm diamter	Linear Meter
Water Distribution		•
SPL1200(e)2	PVC Pipe, 200 mm diamter	Linear Meter
SPL1200(e)3	PVC Pipe, 150 mm diamter	Linear Meter
SPL1200(e)4	PVC Pipe, 100 mm diamter	Linear Meter
SPL1200(e)5	PVC Pipe, 75 mm diamter	Linear Meter
SPL1200(e)6	PVC Pipe, 63 mm diamter	Linear Meter
SPL1200(e)7	PVC Pipe, 50 mm diamter	Linear Meter
SPL1200(e)8	PVC Reducer, 200 mm x 150 mm	Each
SPL1200(e)9	PVC Reducer, 150 mm x 100 mm	Each
SPL1200(e)10	PVC Reducer, 100 mm x 75 mm	Each
SPL1200(e)11	PVC Reducer, 200 mm x 75 mm	Each
SPL1200(e)12	Quick Coupler Valve Assembly	Each
SPL1200(e)13	Quick Coupler Valve Key	Each
SPL1200(e)14	Booster Pump Station 1	Lump Sum
SPL1200(e)15	Booster Pump Station 2	Lump Sum

# 5 SUPPLEMENTAL SPECIFICATIONS

### (a) Provisions on Materials Sources

Information as to the locations, availability and suitability of construction materials as contained in the Soils and Material Reports can be made available for examination, but the Contractor is cautioned to take the following into consideration:

- The Soils and Materials Report does not form part of the Contract Documents. The data contained therein are to be considered as a guide to help in locating suitable sources. The Contractor shall be solely responsible for making all arrangements for obtaining required materials including provisions for access thereto.
- The Contractor shall determine the respective transportation requirements from the supply source to the work site. No separate payments shall be allowed to cover the cost of haulage, the cost of which shall be understood to be included in the various bid items.
- The Contractor shall determine the amount of handling and removal of overburden from the borrow pits or quarry sites and the cost and amount of work required to crush, screen and stockpile in accordance with the Specifications. All such costs shall be included in the bid prices.
- The Contractor is permitted to obtain aggregates from Government-owned quarries, rivers and/or other sites subject to existing regulations. However, this shall not relieve him of responsibility for charges levied, if any, by other agencies. If payment of taxes, duties or other charges is demanded by such Agency the charges shall be considered included in the bid prices pertinent to the quarried materials.

Probable sites or sources of materials are shown on the Drawings, it is understood that the information given is only for the purpose of indicating their approximate locations and distances to the Contract and to provide the Contractor with reference locations.

### (b) Working Areas

The Contractor shall make all arrangements, inclusive of payment if necessary, for use of any land required for working areas outside the Right-of-Way and the Employer will not accept any liability in connection with the use of such land.

Working area provided by the Contractor for his own use shall conform to all applicable standards, regulations and codes set by Government agencies.

The construction, operation and maintenance of Contractor's working area shall be subject to inspection and approval by the Engineer.

### (c) Notice of Operations

No element of the Permanent Works shall be undertaken without the Engineer's approval. Full and complete notice in writing shall be given to the Engineer sufficiently in advance of the time of the operation to enable such arrangements deemed necessary for inspection of the work.

### (d) Protection of Work from the Weather

The Contractor shall, at his own expense, carefully protect all work and materials from damage by weather.

### (e) Templates and Straight Edges

Sufficient metal templates shall be supplied by the Contractor for his own use and to the Engineer to check the finished surfaces of the pavement structures. These templates shall be submitted to the Engineer for his approval. The templates used to control the work shall be maintained at all times in a condition to produce the correct cross sections, profile and shall be checked regularly and, if necessary, repaired or adjusted.

### (f) Submittal of "As-Built" Drawings

The Contractor in Auto CADD shall prepare "As-Built" drawings for the whole of the Works and shall submit within 14 calendar days after the first day of the Defects Liability Period.

The preparation and submittal of As-Built Drawings shall not be paid separately as the cost of this work is subsidiary to all other pay items of the Contract.

### (g) Maintenance of Existing Roads

Upon receipt of the Notice to Proceed, the Contractor shall assume the responsibility for maintaining properly the road section under this Contract. The obligation shall extend to public roads outside the Contract limits and all detour structures that are used as access or haul roads by the Contractor. Maintenance shall generally consist of routine patching, repairs and correction of deformations for asphalt and concrete surfaced roads and the cyclic grading and repair of gravel or earth surface roads. In addition to normal maintenance activities, the Contractor shall be required to repair, at his own expense, any damage to any roads or structures resulting from construction traffic associated with the Contract passing over such roads or structures. Maintenance and repair work shall be carried out in accordance with relevant Specifications or as instructed by the Engineer. Watering of gravel road shall be made to reduce dust and nuisance to the public.

In relation to construction execution, traffic regulation such as load limit, traffic rules, etc., shall be strictly in accordance with the existing laws. In case of any damage to existing road or structure, the Contractor shall repair properly the damaged portion without delay at his own expense to the satisfaction of the Engineer. Maintenance of the existing road(s) shall not be measured for payment, but shall be deemed as subsidiary obligation of the Contractor under the Contract, covered by the unit rates of the pay items in the Bill of Quantities.

# 6 APPENDICES

### **Appendix 1: Specifications for Testing Requirements**

### SPECIFICATION FOR TESTING REQUIREMENTS

The "Specification for Testing Requirements" list is indicative of the test requirements of the Contract, but should not be taken to be exhaustive, and reference should be made to the Contract Documents for details of all testings required.

ITEM NO	DESCRIPTION	ITEM	TEST or CONTROL	FREQUENCY	REMARKS
102	Excavation	<ol> <li>Gradation</li> <li>Atterberg Limits</li> <li>Laboratory Compaction</li> <li>CBR Test</li> <li>Field Density</li> </ol>	AASHTO T88-93 AASHTO T89-93 AASHTO T90-92 AASHTO T99-93 AASHTO T193-92 AASHTO T191-93	For every 1500 cu.m. or fraction thereof or every change in soil properties one (1) complete test For every 500 cu.m. or fraction thereof at least	Test will be made on materials excavated that are incorporated into the work as fill materials For every layer of 20 cm. incorporated thickness
103	Structure Excavation	<ol> <li>Gradation</li> <li>Atterberg Limits</li> <li>Laboratory Compaction</li> <li>CBR Test</li> <li>Field Density</li> </ol>	AASHTO T88-93 AASHTO T89-93 AASHTO T90-92 AASHTO T99-93 AASHTO T193-92 AASHTO T191-93	three (3) density tests For every 1500 cu.m. or fraction thereof or every change in soil properties one (1) complete test For every 500 cu.m. or fraction thereof at least three (3) density tests	Same as Item 102
104	Embankment Materials	<ol> <li>Gradation</li> <li>Atterberg Limits</li> <li>Laboratory Compaction</li> <li>CBR Test</li> <li>Field Density</li> </ol>	AASHTO T88-93 AASHTO T89-93 AASHTO T90-92 AASHTO T99-93 AASHTO T193-92 AASHTO T191-93	For every 1500 cu.m. or fraction thereof or every change in soil properties one (1) complete test For every 500 cu.m. or fraction thereof at least three (3) density tests	Swell factor or shrinkage factor test whichever is preferred shall be submitted for evaluation and approval For every layer of 20 cm. incorporated thickness
105	Subgrade Preparation	Same as Item 104			
200	Aggregate Subbase Course	<ol> <li>Gradation</li> <li>Atterberg Limits</li> <li>Laboratory Compaction</li> <li>CBR Test</li> </ol>	AASHTO T27-93 AASHTO T89-93 AASHTO T90-92 AASHTO T180-93 AASHTO T191-93	For every 300 cu.m. or fraction thereof For every 500 cu.m. or fraction thereof For every 500 cu.m. or fraction thereof, F70 a set of 3 in-situ density tests	For every layer of 150 mm. of compacted depth based on results of compacted trials
		5. Field Density	AASHTO T193-92	For every 2500 cu.m. or fraction thereof	
202	Crushed Aggregate Base Course	Gradation     Atterberg     Limits     One Fractured     Face     Laboratory     Compaction     Compaction	AASHTO T27-93 AASHTO T89-93 AASHTO T90-92 BS 8-12 AASHTO T180-93	For every 300 cu.m. or fraction thereof For every 1500 cu.m. or fraction thereof	Quality test includes Gradation, Atterberg Limits, Abrasion, soundness and CBR Tests
		<ol> <li>Field Density</li> <li>CBR Test</li> </ol>	AASHTO T191-93	For every 500 sq.m. or fraction thereof For every 2500 cu.m. or fraction thereof	For every layer of 15 or 20 cm.
300	Aggregate Surface Course	<ol> <li>Gradation</li> <li>Atterberg Limits</li> <li>Compaction Test</li> <li>Quantity Test</li> <li>Field Density</li> <li>Fractured face</li> </ol>	AASHTO T27-93 AASHTO T89-93 AASHTO T90-93 AASHTO T180-93 AASHTO T191-93 BS 8-12	For every 300 cu.m. or fraction thereof For every 1500 cu.m. or fraction thereof One set of three in-situ density tests for every 500 sq.m. or fraction thereof For every 1500 cu.m. or fraction thereof	

ITEM NO	DESCRIPTION	ITEM	TEST or CONTROL	FREQUENCY	REMARKS
301	Bituminous Prime Coat, MC-70	1. Quality Test		For every 40 metric tons or 200 drums	
302	Bituminous Tack Coat, SS-1	1. Quality Test		For every 40 metric tons or 200 drums	
310	AC Surfacing Course, AC pen. Grade 85-100	A. Bituminous Materials 1. Quality Test		For every 40 metric tons or 200 drums	
		B. Aggregates 1. Quality Test a) grading b) plasticity c) abrasion d) stripping e) bulk specific gravity 2. Fractured face		For every 1500 cu.m. or fraction thereof	
		C. Mix     I. Extraction     Swell and     Stability Test     Grading Test     Laboratory     Compaction		For every 130 metric tons or 75 cu.m. of mix	
		D. Hydrated Mine 1. Quality Test		For every 100 metric tons or fraction thereof	
		E. Compacted Pavement 1. Field + D84 Density Test 2. Thickness Determination Test		For every 100 linear meter or fraction thereof of newly compacted pavement	
311	Portland Cement Concrete Pavement	A. Cement 1. Quality Test		For every 2000 bags or fraction thereof	
		<ul> <li>B. Fine Aggregates</li> <li>1. For source not yet tested or failed in previous quality test</li> <li>a. Quality Test**</li> </ul>		For every 1500 cu.m. or fraction thereof	**Quality Test includes Gradation, Elutration, Bulk Specific Gravity, Absorption, Mortar Strength, Soundness, Organic Impurities, Limit Weight and % Clay Lumps & Shale
		<ol> <li>For source previously tested and passed quality test         <ul> <li>Grading Test</li> <li>Quality Test</li> </ul> </li> </ol>	AASHTO T27-93	For every 75 cu.m. or fraction thereof For ever 1500 cu.m. or fraction thereof	
		C. Coarse Aggregates 1. For source previously not yet tested a. Quality Test *		For every 1500 cu.m. or Fraction thereof	*Quality test includes Grading, Bulk Specific
		b. Grading	AASHTO T27-93	For every 75 cu.m. or fraction thereof	Gravity, Absorption and Abrasion
		<ul> <li>D. Water</li> <li>1. Certification from Project Engineer</li> <li>2. Quality Test if some is questionable</li> </ul>			
		E. Joint Filler 1. Poured Joints Quality Test	AASHTO T137-93	Per shipment on each type of ingredients	

ITEM NO	DESCRIPTION	ITEM	TEST or CONTROL	FREQUENCY	REMARKS
		2. Premolded Joint Filler <u>F. Special Curing Agents</u> 1. Quality Test		Per shipment on each thickness of filler Per shipment	
		G. Steel Bars 1. Quality Test*			*Quality Test includes Bending, Tension and Chemical Analysis
		H.       Concrete         1.       Slump Test         2.       Yield Test         3.       % Air Content         4.       Flexural Strength on 1 set of 3 conc. Beam samples		Per batch Per batch Per batch Per 330 sq.m. of pavement or 75 cu.m. of conc. placed each day or friction thereof	
		I. Completed Pavement 1. Thickness determination by concrete core drilling		Five (5) holes per km. per lane or 5 holes per 500 m. when two (2) lanes are poured simultaneously	
404	Reinforcing Steel	A. Bar Reinforcement 1. Quality Test for Bending, Tension and Chemical Analysis		For every 10,000 kg. or fraction thereof	Per size of bars
		B. Wire and Wire Mesh 1. Quality Test		Per shipment	Per type of wire or wire mesh
405	Structural Concrete	A. Portland Cement Type I		For every 2000 bags or	
		1. Quality Test	AASHTO M85	For every 2,000 bags or fraction thereof	Note 1. Quality test includes gradation, % wash, bulk specific gravity, absorption, mortar strength, unit weight, soundness, organic impurities, % clay lumps and % shale
		B. Fine Aggregates 1. Gradation 2. Quality Test	AASHTO T11-91, T27-93 See Note 2	AASHTO T11-91, For every 75 cu.m. or T27-93 fraction thereof See Note 2 For every 1500 cu.m. or	
		C. Coarse Aggregates 1. Gradation	AASHTO T11-91, T27-93	For every 75 cu.m. or fraction thereof	Note 2. Quality test includes gradation, bulk specific gravity, absorption, abrasion, soundness, soft fragments and unit weight
		2. Quality Test	See Note 2	For every 1500 cu.m. or fraction thereof	
		C. Coarse Aggregates 1. Quality Test	AASHTO T26-79	Every source	
		E. Premolded Filler for Expansion Joints 1. Quality Test	AASHTO T42-92	For every shipment	
		F. Fresh Concrete 1. Comprehensive Strength Test	AASHTO T22-92 AASHTO T23-93	One set of three samples for every 75 cu.m. or fraction thereof	
			AASHTO T119-93	Every batch during pouring	

ITEM NO	DESCRIPTION	ITEM	TEST or CONTROL	FREQUENCY	REMARKS
421(1)	Open Caisson A. Concrete B. Reinforcing Steel Bar C. Shotcrete	<ul> <li>A. Same as Item 405</li> <li>B. Same as Item 404</li> <li>C.1 Aggregate Source</li> <li>1. Quality Test</li> <li>C.2 Aggregates (Fine and Cours)</li> <li>C.3 Unit Mass</li> <li>C.4 Air Content</li> <li>C.5 Compressive Strength</li> </ul>	AASHTO M 80 AASHTO T 27 and T11 AASHTO T 121 AASHTO T 152/196 AASHTO T 124	1 per material type 1 per load 1 set per 25m <sup>3</sup> but not less than 1 per day (see Note 1)	Same as Item 405 Note 1. Prepare test panels according to Subsection 514.3.5. Obtain two 75-mm diameter core specimens from each panel according to AASHTO T 124. A single compressive strength test result is the average result from two 75- mm dia core specimens from the same test panel tested according to AASHTO T 23 at 28 days
	D. Steel Plate Liners	A. Liner Plate B. Bolts/Nuts C. Steel	ASTM A283 ASTM A307/ASTM A193 ASTM A36	1-Q Quality Test or Mill Certificate for each type of Materials used.	Same as Item 403, Metal Structures
500	Reinforced Concrete Pipe Culvert	<ol> <li>Quality Test strength, absorption and dimensions</li> </ol>	AASHTO M170	For every 50 pcs.	Note: Mortar for joints will be the same as Item 405
523(1)	Wall Cribbing A. Reinforcing Steel Bar B. Shotcrete	<ul> <li>A. Same as Item 404</li> <li>B. Same as Item 421(1)</li> <li>C. Anchor bolts, nuts, and washers <ol> <li>Quality Test or Mill</li> <li>Certificate for each type of Materials used.</li> </ol> </li> </ul>	ASTM A36/ ASTM A283		Manufacturer's Certificate on the Physical Properties and Strength of each material used.

ITEM NO	DESCRIPTION	ITEM	TEST or CONTROL	FREQUENCY	REMARKS
		2. Alternative Requirement	Same as Item 405	One set of 3 concrete cylinder for not more than 25 pipes cast in the field and one Inspection Report for each size for not more than 25 pipes cast in the field	
505	Grouted Riprap	A Cement 1. Quality Test B. Fine Aggregates 1. Quality Test 2. Grading	PS For every 2,000 bags or fraction thereof For every 1500 cu.m. or fraction thereof For every 75 cu.m. or fraction thereof		
		C. Stone 1. Inspection Report from Engineer D. Water 1. Certificate from Project Engineer 2. Quality Test, if source is questionable			
506	Stone Masonry	A. Cement B. Water C. Fine Aggregates	Same as Item 405	Same as Item 405	
600	Concrete Curb	A. Cement B. Joint Filler	Same as Item 405 Same as Item 311		
603	Metal Beam Guardrail	A. Steel Posts 1. Quality Test or Mill Test Concrete		For each type and shipment of metal	
605	Road Sign	Inspection Report from Engineer			
612	Reflectorized Thermoplastic Pavement Marking	Paint Quality Test		One 20 liter can for every 100 cans or fraction thereof or one 4 liter can per 100 cans or fraction thereof or <b>PNS 461</b>	
712	Structural Metal	<ol> <li>Quality Test</li> <li>Inspection Report from Engineer</li> </ol>	AASHTO Specifications	For every 10,000 kg. or for every shipment one mill test certificate	

# **SECTION VII**

# Drawings

(IN SEPARATE VOLUME)

# **SECTION VIII**

**Bill of Quantities** 

# **BILL OF QUANTITIES**

Project Name:

Location:

# CONSTRUCTION OF NEW CLARK CITY CONNECTING ROAD TO INDUSTRIAL PARK

**New Clark City** 

	SUMMARY					
PART	DESCRIPTION	BID AMOUNT (Php)				
Α	Facilities for the Engineer					
В	Other General Requirement					
С	Earthworks					
D	Sub-base and Base Course					
E	Surface Courses					
F	Bridge Construction (Reinforced Concrete Box culverts)					
G	Drainage and Slope Protection Structures					
Н	Miscellaneous Structures					
J	Roadway Lighting					
K	Street Landscape					
	TOTAL BID AMOUNT (Php)					

# TOTAL BID AMOUNT:

inFigures:

inWords:

Name of Bidder's Company

Name and Signature of Bidder's Authorized Representative

Date

Official Stamp

#### Project :CONSTRUCTIONOF NEW CLARK CITY CONNECTINGROAD TO INDUSTRIAL PARK Name :New Clark City Location

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT COST (Pesos)	AMOUNT (Pesos)
	PART A - FACILITIES FOR THE ENGINEER				
A.1.1(3)	Construction of Field Office Building for the Engineer	l.s.	1.00		
A 4 4(40)					
A.1.1(10)	Provision of Living Quarters for the Engineer (Rental Basis)	mo.	24.00		
A.1.1(11)	Provision of Furniture/Fixtures, Equipment and Appliances for the Field Office for the Engineer (Schedule A)	l.s.	1.00		
A.1.1(13)	Living Quarters for the Engineer (Schedule B)	l.S.	1.00		
A.1.1(16)	Operation and Maintenance of Field Office for the Engineer, (including Schedules D and E)	mo.	24.00		
A.1.1(18)	Operation and Maintenance of Living Quarters for the Engineer (Schedule F)	mo.	24.00		
A.1.2(2)	Provision of 4x4 Pick-Up Type Double Cab Service Vehicle for the Engineer (Bare Rental Basis)	veh - mo.	72.00		
A.1.2(5)	Operation and Maintenance of 4x4 Pick-up Type Double Cab Service Vehicle for the Engineer	veh - mo.	72.00		
A.1.3(1)	Provision of Field Office Staff for the Assistance to the Engineer	mo.	24.00		
A.1.4(1)	Provision of Progress Photographs	mo.	24.00		
A 1 E(1)	Dravision of Communication Easility for the Engineer				
A.1.5(1)	Provision of Communication Facility for the Engineer	ea.	10.00		
A.1.5(2)	Operation and Maintenance of Communication Facility for the Engineer	ea.	240.00		
TOTAL FOR PA	RT A - FACILITIES FOR THE ENGINEER	I	1	Php	

Date

Project Name Location :CONSTRUCTIONOF NEW CLARK CITY CONNECTINGROAD TO INDUSTRIAL PARK : New Clark City

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT COST (Pesos)	AMOUNT (Pesos)
	PART B - OTHER GENERAL REQUIREMENTS				
B.2	Medical Room and First Aid Facilities	l.s.	1.00		
B.5	Project Billboard / Signboard	ea.	4.00		
B.7(1)	Occupational Safety and Health Program	mo.	24.00		
B.8(1)	Traffic Management	mo.	24.00		
B.9	Mobilization/Demobilization	l.s.	1.00		
B.14	Environmental Management and Monitoring	mo.	24.00		
TOTAL FOR	PART B - OTHER GENERAL REQUIREMENTS	Php			

Name of Bidder's Company

Project Name Location :CONSTRUCTIONOF NEW CLARK CITY CONNECTINGROAD TO INDUSTRIAL PARK : New Clark City

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT COST (Pesos)	AMOUNT (Pesos)
	PART C - EARTHWORKS				
100(1)	Clearing and Grubbing	ha.	50.16		
100(3)a1	Individual Removal of Trees, 150 - 300 mm dia.	ea.	232.00		
100(3)a2	Individual Removal of Trees above 301 - 500 mm dia.	ea.	292.00		
100(3)a3	Individual Removal of Trees, 501 - 750 mm dia.	ea.	98.00		
100(3)a4	Individual Removal of Trees above 751 - 900 mm dia.	ea.	9.00		
100(4)	Individual Removal of Trees, above - 900 mm dia.	ea.	5.00		
101(5)c2	Removal of Pipes other than Pipe Culverts, HDPE 75mm diam.	l.m.	2,500.00		
102(2)	Surplus Common Excavation	cu.m.	157,581.30		
104(1)a	Embankment from Roadway Excavation, Common Soil	cu.m.	625,460.09		
104(1)c	Embankment from Roadway Excavation, Hard Rock	cu.m.	32,746.02		
105(1)a	Subgrade Preparation, Common Materials (For Cut Section Only)	sq.m.	191,673.14		
TOTAL FOR	R PART C - EARTHWORKS		Php		

Project :CONSTRUCTIONOF NEW CLARK CITY CONNECTINGROAD TO INDUSTRIAL PARK Name : New Clark City Location

Name of Bidder's Company

Name and Signature of Bidder's Authorized Representative Date

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT COST (Pesos)	AMOUNT (Pesos)
	PART D - SUBBASE AND BASE COURSE				
200(1)	Aggregate Subbase Course	cu.m	56,367.39		
TOTAL FOR PART D - SUBBASE AND BASE COURSE				Php	

Name	of	Bidder	's	Com	pany
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Project Name Location

### :CONSTRUCTIONOF NEW CLARK CITY CONNECTINGROAD TO INDUSTRIAL PARK : New Clark City

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT COST (Pesos)	AMOUNT (Pesos)
	PART E - SURFACE COURSE				
311(1)f1	Portland Cement Concrete Pavement, (Unreinforced) 0.30 m thick	sq.m	155,426.5 5		
TOTAL FOR PART E - SURFACE COURSE					

Name of Bidder's Company

Project Name Location :CONSTRUCTIONOF NEW CLARK CITY CONNECTINGROAD TO INDUSTRIAL PARK : New Clark City

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT COST (Pesos)	AMOUNT (Pesos)
	PART F - BRIDGE CONSTRUCTION				
	REINFORCED CONCRETE BOX CULVERTS				
103(1)a	Structure Excavation, Common Soil	cu.m.	34,986.91		
103(3)	Foundation Fill	cu.m.	214.83		
300(1)	Gravel Surface Course	cu.m.	118.83		
404(1)b	Reinforcing Steel, Grade 60	kg.	510,505.52		
405(1)a3	Structural Concrete Class "A" (20.68 Mpa), 28 days	cu.m.	1,453.51		
405(1)b3	Structural Concrete Class "A" (27.58 Mpa), 28 days	cu.m.	3,460.48		
407(8)	Lean Concrete	cu.m.	107.42		
511(1)b6	Gabions, 0.50m x 1.00m x 2.00m	cu.m.	928.50		
511(3)	Filter Cloth	sq.m.	1,861.50		
608(1)	Furnishing and Placing Topsoil	cu.m.	353.70		
610(1)	Sodding	sq.m.	1,179.00		
614(1)c	Waterstop, 200mm	m.	378.00		
TOTAL FOR PART F - BRIDGE CONSTRUCTION					

Project Name Location :CONSTRUCTIONOF NEW CLARK CITY CONNECTINGROAD TO INDUSTRIAL PARK : New Clark City

Name of Bidder's Company

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT COST (Pesos)	AMOUNT (Pesos)
	PART G - DRAINAGE AND SLOPE PROTECTION STRUCTURES				
103(3)	Foundation Fill	cu.m.	754.20		
103(1)a	Structure Excavation, Common Soil	cu.m.	9,443.41		
103(6)a	Pipe Culvert and Drain Excavation, Common Soil	cu.m.	541.18		
000(1)					
300(1)	Gravel Surface Course	cu.m.	158.51		
404(1)b	Reinforcing Steel, Grade 60	kg.	401,257.42		
405(1)a3	Structural Concrete Class "A" (20.68 Mpa), 28 days	cu.m.	2,845.71		
407(8)	Lean Concrete	cu.m.	379.33		
500(1)a1	Pipe Culverts, 610 mm dia. Class II, RCPC	l.m.	1,572.00		
SPL500(3)	Reinforced Concrete Lined Ditch, 0.8m x 0.8m	l.m.	6,155.00		
511(1)b6	Gabions, (0.50 m x 1.00 m x 2.00 m), PVC Coated	cu.m.	579.00		
511(3)	Filter Cloth	sq.m.	1,732.10		
608(1)	Furnishing and Placing Topsoil	cu.m.	105.83		
610(1)	Sodding	sq.m.	352.76		
614(1)c	Waterstop, 200mm	m.	328.00		
	STORM DRAIN (RCBC Type)				

Project Name Location

### :CONSTRUCTIONOF NEW CLARK CITY CONNECTINGROAD TO INDUSTRIAL PARK : New Clark City

103(1)a	Structure Excavation, Common Soil	cu.m.	129,412.17	
500(2)a	Storm Drain (RCBC Type), 1.25m x 1.25m	l.m.	4,725.00	

500(2)c	Storm Drain (RCBC Type), 1.50m x 1.25m	l.m.	210.00	
500(2)d	Storm Drain (RCBC Type), 1.50m x 1.50m	l.m.	4,455.00	
500(2)e	Storm Drain (RCBC Type), 1.50m x 1.80m	l.m.	210.00	
500(2)f	Storm Drain (RCBC Type), 1.80m x 1.50m	l.m.	1,585.00	
500(2)g	Storm Drain (RCBC Type), 1.80m x 1.80m	l.m.	685.00	
500(2)h	Storm Drain (RCBC Type), 1.80m x 2.10m	l.m.	620.00	
500(2)i	Storm Drain (RCBC Type), 2.40m x 1.80m	l.m.	1,590.00	
500(2)j	Storm Drain (RCBC Type), 2.40m x 2.10m	l.m.	980.00	
500(2)k	Storm Drain (RCBC Type), 2.40m x 2.40m	l.m.	900.00	
500(2)I	Storm Drain (RCBC Type), 2.40m x 2.75m	l.m.	740.00	
	MANHOLE			
103(1)a	Structure Excavation, Common Soil	cu.m.	5,459.13	
502(1)a7	Manhole, 1.25m x 1.25m, Concrete	ea.	216.00	
502(1)a8	Manhole, 1.50m x 1.25m, Concrete	ea.	15.00	
502(1)a9	Manhole, 1.50m x 1.50m, Concrete	ea.	108.00	
502(1)a10	Manhole, 1.50m x 1.80m, Concrete	ea.	7.00	
502(1)a11	Manhole, 1.80m x 1.50m, Concrete	ea.	57.00	

502(1)a12	Manhole, 1.80m x 1.80m, Concrete	ea.	18.00		
502(1)a13	Manhole, 1.80m x 2.10m, Concrete	ea.	19.00		
502(1)a14	Manhole, 2.40m x 1.80m, Concrete	ea.	52.00		
502(1)a15	Manhole, 2.40m x 2.10m, Concrete	ea.	38.00		
502(1)a16	Manhole, 2.40m x 2.40m, Concrete	ea.	24.00		
502(1)a17	Manhole, 2.40m x 2.75m, Concrete	ea.	25.00		
	CATCH BASIN (Junction Box)				
103(1)a	Structure Excavation, Common Soil	cu.m.	1,476.64		
502(3)a7	Catch Basins (Junction Box), 1.50m x 1.90m x 2.00m	ea.	193.00		
	CURB INLET				
103(1)a	Structure Excavation, Common Soil	cu.m.	4,536.14		
502(2)a7	Inlet, Curb	ea.	491.00		
	WATERWAY CHANNEL, Sta. 0-060 to Sta. 1+200, L = 1288.32m				
300(1)	Gravel Surface Course	cu.m.	1,545.98		
404(1)a	Reinforcing Steel, Grade 40	kg.	204,670.00		
405(1)a3	Structural Concrete Class "A" (20.68 Mpa), 28 days	cu.m.	4,093.44		
E44(4) 0			0.000.00		
511(1)b6	Gabions, (0.50 m x 1.00 m x 2.00 m), PVC Coated	cu.m.	3,220.00		
511(3)	Filter Cloth	sam	22 148 20		
511(5)		əq.m.	22,140.03		
TOTAL FOR	Php				

### Name of Bidder's Company

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT COST (Pesos)	AMOUNT (Pesos)
	PART H - MISCELLANEOUS STRUCTURES				
600(1)a	Concrete Curb (Cast in Place, Flush), 250mm x 178mm/200mm	l.m.	35,920.00		
600(1)b	Concrete Curb (Cast in Place, Drop), 280mm/360mm x 175mm/220mm	l.m.	620.00		
600(1)c	Concrete Curb (Cast in Place, Upstand), 200mm x 450mm	l.m.	17,850.00		
600(4)a	Concrete Curb and Gutter, Type 1 (Cast in Place), 350mm x 670mm	l.m.	17,610.00		
600(4)b	Concrete Curb and Gutter, Type 2 (Cast in Place), 220mm x 670mm	l.m.	795.00		
SPL 601(2)1	Sidewalk/Pedestrian Lane Paving (Reinforced), 100mm thick with Stamped Concrete Finished Texture	sq.m	73,761.90		
SPL 601(2)2	Bike Lane Paving (Reinforced), 100mm thick with Sand Washed Finished Texture	sq.m	51,848.48		
605(1)c1	Warning Signs, 600mm, W1-3A , Horizontal Alignment Reverse Turn L or R	ea.	11.00		
605(1)d1	Warning Signs, 600mm, W1-4A, Horizontal Alignment Reverse Curve Turn L or R	ea.	2.00		

Proje Nam Loca	ect e ation	:CONSTRUCTIONOF NEW CLARK CITY CONNE : New Clark City	CTINGR	OAD TO INDUSTI	RIAL PARK	
(	605(1) 2	Warning Signs, 600mm, W2-6B, Intersection and Junction Signs Priority Junction	ea.	12.00		
6	605(1)g2	Warning Signs, 600mm , W2-1B, Intersection and Junction Signs Priority Cross	ea.	17.00		
6	605(1)q1	Warning Signs, 600mm, W3-1A, Advance Warning of Traffic Control Device Signs Signal Ahead	ea.	8.00		

605(2)a1	Regulatory Signs, 450 x 450 mm , R1-1A, Priority Signs Stop	ea.	46.00	
605(2)b4	Regulatory Signs, 640 x 900 mm , R1-2P, Priority Signs Give Way	ea.	46.00	
605(2)g3	Regulatory Signs, 450 x 750mm, R2-3PA, Direction Signs KEEP RIGHT; Plate Type	ea.	46.00	
605(2)p1	Regulatory Signs, 600mm, R3-15A, Prohibitive or Restrictive Signs Turning Prohibition; No U-Turn	ea.	44.00	
605(2)r1	Regulatory Signs, 450mm , R4-1A(40), Speed Signs Speed Restriction (Maximum)	ea.	24.00	
605(2)ad1	Regulatory Signs, 400 x 600 mm, R5-10, Parking Signs Do Not Block Intersection	ea.	11.00	
605(2)ai1	Regulatory Signs, 450mm, R6-8A, Miscellaneous Signs Pedestrian Crossing	ea.	47.00	
605(2)ak1	Regulatory Signs, 450mm,R6-10A, Miscellaneous Signs Bike Lane Signs	ea.	48.00	
605(3)a1.4	Regularory Signs, U-TURN AHEAD	ea.	2.00	
612(1)	Reflectorized Thermoplastic Pavement Markings (White)	sq.m	10,956.84	
612(2)	Reflectorized Thermoplastic Pavement Markings (Yellow)	sq.m	72.74	

# :CONSTRUCTIONOF NEW CLARK CITY CONNECTINGROAD TO INDUSTRIAL PARK : New Clark City

Name of Bidder's Company

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT COST (Pesos)	AMOUNT (Pesos)
	PART J - ROADWAY LIGHTING				
624	Roadway Lighting				
	Electrical Steel Poles				
	Structural quality steel hot dip galvanized, tapered like, 3mm thk. Shaft pole tubular type, built- in hand hole access for wiring connection, with complete base mounting plate, fixing anchor bolts, washers and bolts.				
624(2)a3	10.00 meter High with Double arm supports 1.8m (road center island), with Street Light 2x90W LED Light Fixtures, 2-250W Solar Panel with complete solar panel steel bracket support, 4x150AH Gel Batteries, 2-AC-DC Hybrid Controller, 1-DC 24V power supply, including anchor bolts, nuts and washers and connection wiring cables.	set	246.00		
624(1)b3	10.00 meter High with Single arm supports 1.8m (road intersection), with 1x90W LED Street Light Fixtures, 1-250W Solar Panel with complete solar panel steel bracket support, 2x150AH Gel Batteries, 1-AC-DC Hybrid Controller, 1-DC 24V power supply, including anchor bolts, nuts and washers and connection wiring cables.	set	57.00		

Project Name	:CONSTRUCTIONOF NEW CLARK CITY : New Clark City	CONNE	CTINGROAD 7	TO INDUSTRIAL	PARK
624(2)c1	6.00 meter High with Double arm supports 1.0m (walk/ bike lanes), with Street Light 2x40W LED Light Fixtures, 1-240W solar panel with complete solar panel steel bracket support, 2x90AH Gel Batteries, 1-AC-DC Hybrid Controller, 1-DC 24V power supply, including anchor bolts, nuts and washers and connecting wiring cables.	set	687.00		
624(4)	Conductors and Cables (Underground Electrical Works)				
	Supply and install Conductors and Cables complete with necessary accessories with testing and commissioning as shown on drawings and and as described on specifications to make the system operational.				
624(4)a	Lighting Power Cable, XLPE/PVC, 90 Degrees C, rated 600-1000v, 4/c 10 mm2	l.m.	17,280.00		
624(4)b	Lighting Power Cable, XLPE/PVC, 90 Degrees C, rated 600-1000v, 4/c 16 mm2	l.m.	82,068.00		
624(4)c	Lighting Power Cable, XLPE/PVC, 90 Degrees C, rated 600-1000v, 4/c 50 mm2	l.m.	300.00		
624(5)	Grounding and Bonding (Underground Electrical Works)				
	Supply and install Lightning Protection and Grounding System complete with testing and commissioning and necessary accessories as shown on drawings and as described on specifications to make the system operational.				
624(5)a	Ground wire, green PVC insulated, Building wire, 1/c 6 mm2	l.m.	82,068.00		
624(5)b	Ground wire, green PVC insulated, Building wire, 1/c 16 mm2	l.m.	10,200.00		
624(5)c	Ground wire, bare copper, 10 mm2	l.m.	3,000.00		
624(5)d	Ground Rod, 20mm dia. X 3m long copper clad	ea.	990.00		

624(6)	Conduit / Raceway / Fittings			
624(6)a	HDPE, 100mm dia. Flexible Pipe	l.m.	170,112.00	
624(6)b	PVC Pipe, 50 mm dia.	l.m.	8,168.00	
624(6)c	PVC Pipe, 25 mm dia.	l.m.	2,000.00	
624(6)d	PVC Elbow 90 degrees x 50mm dia.	ea.	4,080.00	
624(6)e	PVC Elbow 90 degrees x 25 mm dia.	ea.	3,000.00	
624(6)f	PVC Coupling, 50mm dia.	ea.	8,168.00	
624(6)g	PVC Coupling, 25mm dia.	ea.	2,000.00	 
624(7)	Lighting Distribution Panelboard (Low Voltage)			
	Supply and install Enclosed Cabinet with MCB & BCB complete with testing and commisioning, supports, fittings, adapters, boxes and necessary accessories as shown on drawings and and as described on specifications to make the system functioning. accessories as shown on drawings and as described on specification to make the system operational.			
624(7)a	LDP-1, 100 AT/ 225 AF, 3Ph, 4W, 400Y/230 V, 60 Hz, 10 KAIC, Main Circuit Breaker with the following Branch Circuit Breakers (12 ways 3ph CB) 12- 20 AT/ 100AF, 3Ph, BCB, with ground connection facility in NEMA 3R Enclosure, Pad Mounted, Bottom feed for Incoming/Outgoing feeder cables	set	1.00	
624(7)b	LDP-2, 100 AT/ 225 AF, 3Ph, 4W, 400Y/230 V, 60 Hz, 10 KAIC, Main Circuit Breaker with the following Branch Circuit Breakers (18 ways 3ph CB) 18- 20 AT/ 100AF, 3Ph, BCB, with ground connection facility in NEMA 3R Enclosure, Pad Mounted, Bottom feed for Incoming/Outgoing feeder cables	set	1.00	

624(7)c	LDP-3, 100 AT/ 225 AF, 3Ph, 4W, 400Y/230 V, 60 Hz, 10 KAIC, Main Circuit Breaker with the following Branch Circuit Breakers (12 ways 3ph CB) 12- 20 AT/ 100AF, 3Ph, BCB, with ground connection facility in NEMA 3R Enclosure, Pad Mounted, Bottom feed for Incoming/Outgoing feeder cables	set	1.00		
624(8)	Concrete Encasement (Reinforced)				
624(8)a	Electrical Handholes (for cabling route)	ea.	111.00		
624(8)b	Battery Handholes	ea.	990.00		
624(8)b1	Duct Banks (Concrete Encasement), 10.0M Single and Double Arm Pole for Road Crossing	l.m.	971.00		
624(8)b2	Duct Banks (Concrete Encasement), 6.0M Double Arm Pole for Road Crossing	l.m.	499.00		
624(8)b3	Duct Banks (Direct Burial), 10.0M Single and Double Arm Pole for Non-Road Crossing	l.m.	8,241.00		
624(8)b4	Duct Banks (Direct Burial), 6.0M Double Arm Pole for Non-Road Crossing	l.m.	16,553.00		
624(8)a	Foundation Pad (10M-2x90W Solar Street Light, Double Arm)	ea.	246.00		
624(8)b	Foundation Pad (10M-1x90W Solar Street Light, Single Arm)	ea.	57.00		
624(8)c	Double Arm)	ea.	687.00		
624(8)d	Foundation Pad (Lighting Distribution Panelboard)	ea.	3.00		
TOTAL FO	R PART J - ROADWAY LIGHTING	Php			

Name of Bidder's Company Name and Signature of Bidder's Authorized Representative Date

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT COST (Pesos)	AMOUNT (Pesos)
	PART K - STREET LANDSCAPE				
	Trees, 2000 - 3000mm ht., 1" to 2" cal. min.				
SPL1200(a)1	Dita, 2000 - 3000mm ht., 1" to 2" cal. min.	ea.	353.00		
SPL1200(a)2	Aunasin, 2000 - 3000mm ht., 1" to 2" cal. min.	ea.	107.00		
SPL1200(a)3	Antipolo, 2000 - 3000mm ht., 1" to 2" cal. min.	ea.	104.00		
SPL1200(a)4	Malabulak, 2000 - 3000mm ht., 1" to 2" cal. min.	ea.	89.00		
SPL1200(a)5	Salinbobong, 2000 - 3000mm ht., 1" to 2" cal. min.	ea.	76.00		
SPL1200(a)6	Golden Shower, 2000 - 3000mm ht., 1" to 2" cal. min.	ea.	76.00		

SPL1200(a)7	Pink Shower, 2000 - 3000mm ht., 1" to 2" cal. min.	ea.	100.00	
SPL1200(a)8	Balitbitan, 2000 - 3000mm ht., 1" to 2" cal. min.	ea.	362.00	
SPL1200(a)9	Katmon, 2000 - 3000mm ht., 1" to 2" cal. min.	ea.	14.00	
SPL1200(a)1 0	Dao, 2000 - 3000mm ht., 1" to 2" cal. min.	ea.	16.00	
SPL1200(a)1 1	Dap dap, 2000 - 3000mm ht., 1" to 2" cal. min.	ea.	127.00	
SPL1200(a)1 2	Amugis, 2000 - 3000mm ht., 1" to 2" cal. min.	ea.	63.00	
SPL1200(a)1 3	Milendres, 2000 - 3000mm ht., 1" to 2" cal. min.	ea.	6.00	
SPL1200(a)1 4	lpil, 2000 - 3000mm ht., 1" to 2" cal. min.	ea.	284.00	
SPL1200(a)1 5	Bani, 2000 - 3000mm ht., 1" to 2" cal. min.	ea.	45.00	
SPL1200(a)1 6	Narra, 2000 - 3000mm ht., 1" to 2" cal. min.	ea.	74.00	
SPL1200(a)1 7	Molave, 2000 - 3000mm ht., 1" to 2" cal. min.	ea.	70.00	
SPL1200(a)1 8	Siar, 2000 - 3000mm ht., 1" to 2" cal. min.	ea.	99.00	
SPL1200(a)1 9	Bagalunga, 2000 - 3000mm ht., 1" to 2" cal. min.	ea.	22.00	
SPL1200(a)2 0	Banuyo, 2000 - 3000mm ht., 1" to 2" cal. min.	ea.	77.00	
SPL1200(a)2 1	Balakat, 2000 - 3000mm ht., 1" to 2" cal. min.	ea.	175.00	

	Sidewalk Planting List			
	Shrubs			
SPL1200(b)1	Fookien Tea, 600 mm ht., well-rooted, well shaped	ea.	14,916.0 0	
SPL1200(b)2	Akapulko, 800 mm ht., well-rooted, well shaped	ea.	3,498.00	
SPL1200(b)3	Garden Croton, 500 mm ht., well-rooted, well shaped	ea.	33,742.0 0	
SPL1200(b)4	Gold Dust Croton, 500 mm ht., well-rooted, well shaped	ea.	43,900.0 0	
SPL1200(b)5	Red Hookwood, 450 mm ht., well-rooted, well shaped	ea.	39,067.0 0	
SPL1200(b)6	Golden Dewdrop, 400 mm ht., well-rooted, well shaped	ea.	31,200.0 0	
SPL1200(b)7	Picara, 300 mm ht., well-rooted, well shaped	ea.	55,549.0 0	
SPL1200(b)8	Golden Bush, 500 mm ht., well-rooted, well shaped	ea.	28,538.0 0	
SPL1200(b)9	Variegated Gumamela, 600 mm ht., well- rooted, well shaped	ea.	28,465.0 0	
SPL1200(b)1 0	Yellow Gumamela, 600 mm ht., well-rooted, well shaped	ea.	38,339.0 0	
SPL1200(b)1 1	Red Gumamela, 600 mm ht., well-rooted, well shaped	ea.	33,726.0 0	
SPL1200(b)1 2	Beach Hymenocalls, 600 mm ht., well-rooted, well shaped	ea.	52,639.0 0	
SPL1200(b)1 3	Yellow Lantana, 300 mm ht., well-rooted, well shaped	ea.	26,510.0 0	
SPL1200(b)1 4	Red Lantana, 300 mm ht., well-rooted, well shaped	ea.	38,863.0 0	

SPL1200(b)1 5	Pink Lantana, 300 mm ht., well-rooted, well shaped	ea.	48,253.0 0	
SPL1200(b)1 6	Purple Lantana, 300 mm ht., well-rooted, well shaped	ea.	48,284.0 0	
SPL1200(b)1 7	Kamuning, 800 mm ht., well-rooted, well shaped	ea.	12,004.0 0	
SPL1200(b)1 8	Fragrant Pandan, 500 mm ht., well-rooted, well shaped	ea.	8,835.00	
SPL1200(b)1 9	Forget-me-not, 500 mm ht., well-rooted, well shaped	ea.	76,869.0 0	
SPL1200(b)2 0	Maki, 800 mm ht., well-rooted, well shaped	ea.	14,267.0 0	
SPL1200(b)2 1	Green Schefflera, 500 mm ht., well-rooted, well shaped	ea.	48,090.0 0	
	Lawn & Groundcover			
SPL1200(c)1	Peanut Plant, rooted cuttings	ea.	20,123.0 0	
SPL1200(c)2	White Pugon, 200 mm ht., well-rooted, well shaped	ea.	15,888.0 0	
SPL1200(c)3	Dwarf pandan, 200 mm ht., well-rooted, well shaped	ea.	43,205.0 0	
SPL1200(c)4	Moses-in-the-cradle, 200 mm ht., well-rooted, well shaped	ea.	46,785.0 0	
	Median Planting List			
	Shrubs :			
SPL1200(d)1	Red Bougainvilla, 500 mm ht., well-rooted, well shaped	ea.	4,690.00	
SPL1200(d)2	Pink Bougainvilla, 500 mm ht., well-rooted, well shaped	ea.	6,235.00	
SPL1200(d)3	Purple Bougainvilla, 500 mm ht., well-rooted, well shaped	ea.	6,354.00	
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SPL1200(d)4	Yellow Bougainvilla, 500 mm ht., well-rooted, well shaped	ea.	5,678.00	
SPL1200(d)5	White Bougainvilla, 500 mm ht., well-rooted, well shaped	ea.	8,480.00	
SPL1200(d)6	Fookien Tea, 600 mm ht., well-rooted, well shaped	ea.	1,507.00	
SPL1200(d)7	Garden Croton, 500 mm ht., well-rooted, well shaped	ea.	13,578.0 0	
SPL1200(d)8	Gold Dust Croton, 500 mm ht., well-rooted, well shaped	ea.	3,924.00	
SPL1200(d)9	Red Hookwood, 450 mm ht., well-rooted, well shaped	ea.	6,049.00	
SPL1200(d)1 0	Golden Dewdrop, 400 mm ht., well-rooted, well shaped	ea.	6,473.00	
SPL1200(d)1 1	Variegated Gumamela, 600 mm ht., well- rooted, well shaped	ea.	2,175.00	
SPL1200(d)1 2	Yellow Gumamela, 600 mm ht., well-rooted, well shaped	ea.	8,521.00	
SPL1200(d)1 3	Red Gumamela, 600 mm ht., well-rooted, well shaped	ea.	6,806.00	
SPL1200(d)1 4	Red Santan, 400 mm ht., well-rooted, well shaped	ea.	2,475.00	
SPL1200(d)1 5	Yellow Santan, 400 mm ht., well-rooted, well shaped	ea.	3,898.00	
SPL1200(d)1 6	White Santan, 400 mm ht., well-rooted, well shaped	ea.	15,645.0 0	
SPL1200(d)1 7	Yellow Lantana, 300 mm ht., well-rooted, well shaped	ea.	15,645.0 0	

SPL1200(d)1 8	Red Lantana, 300 mm ht., well-rooted, well shaped	ea.	9,496.00	
SPL1200(d)1 9	Pink Lantana, 300 mm ht., well-rooted, well shaped	ea.	10,395.0 0	
SPL1200(d)2 0	Purple Lantana, 300 mm ht., well-rooted, well shaped	ea.	23,175.0 0	
SPL1200(d)2 1	Texas Ranger, 500 mm ht., well-rooted, well shaped	ea.	5,778.00	
SPL1200(d)2 2	Kamuning, 800 mm ht., well-rooted, well shaped	ea.	3,648.00	
SPL1200(d)2 3	Donya Luz, 800 mm ht., well-rooted, well shaped	ea.	2,893.00	
SPL1200(d)2 4	Donya Aurora, 800 mm ht., well-rooted, well shaped	ea.	2,592.00	
SPL1200(d)2 5	DonyaTrining, 800 mm ht., well-rooted, well shaped	ea.	2,512.00	
SPL1200(d)2 6	Forget-me-not, 500 mm ht., well-rooted, well shaped	ea.	13,687.0 0	
SPL1200(d)2 7	Maki 1, 800 mm ht., well-rooted, well shaped	ea.	3,002.00	
SPL1200(d)2 8	Acapulco, 800 mm ht., well-rooted, well shaped	ea.	2,512.00	
	Water Pipelines for Landscaping			
	Water Transmission and Distribution Lines			
103(1)a	Structure Excavation, Common Soil	cu.m	6,418.50	
SPL1200(e)1	PVC Pipe, 200mm diameter (Transmission Lines)	l.m.	2,325.00	
SPL1200(e)2	PVC Pipe, 200mm diameter (Distribution Lines)	l.m.	525.00	

SPL1200(e)3	PVC Pipe, 150mm diameter	l.m.	4,083.00		
SPL1200(e)4	PVC Pipe, 100mm diameter	l.m.	3,548.00		
SPL1200(e)5	PVC Pipe, 75mm diameter	l.m.	1,703.00		
SPL1200(e)6	PVC Pipe, 63mm diameter	l.m.	5,712.00		
SPL1200(e)7	PVC Pipe, 50mm diameter	l.m.	10,775.0 0		
SPL1200(e)8	PVC Reducer, 200mm x 150mm	ea.	1.00		
SPL1200(e)9	PVC Reducer, 150mm x 100mm	ea.	1.00		
SPL1200(e)1 0	PVC Reducer, 100mm x 75mm	ea.	2.00		
SPL1200(e)1 1	PVC Reducer, 200mm x 75mm	ea.	1.00		
SPL1200(e)1 2	Quick Coupler Valve Assembly	ea.	528.00		
SPL1200(e)1 3	Quick Coupler Valve Key	ea.	20.00		
SPL1200(e)1 4	Booster Pump Station 1	l.s.	1.00		
SPL1200(e)1 5	Booster Pump Station 2	l.s.	1.00		
TOTAL FOR PA	ART K - STREET LANDSCAPE		Php		

\_\_\_\_

\_\_\_\_

Name of Bidder's Company

# **SECTION IX**

**Bidding Forms** 

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### **Bid Form**

**Bid Form** 

[Insert date]

To: Chairperson Bids and Awards Committee I Procurement Service – DBM Cristobal St., Paco, Manila

We, the undersigned, declare that:

- (a) We have examined and have no reservation to the Bidding Documents, including Addenda, for the Contract *[insert name of contract]*;
- (b) We offer to execute the Works for this Contract in accordance with the Bid and Bid Data Sheet, General and Special Conditions of Contract accompanying this Bid;

The total price of our Bid, excluding any discounts offered below is: [insert amount in figures] and [insert amount in words];

The discounts offered and the methodology for their application are: [insert amount in figures] and [insert amount in words];

- (c) Our Bid shall be valid for a period of 120 days from the date fixed for the Bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (d) If our Bid is accepted, we commit to obtain a Performance Security in the amount of *[insert percentage amount]* percent of the Contract Price for the due performance of the Contract;
- (e) Our firm, including any subcontractors or suppliers for any part of the Contract, have nationalities from the following eligible countries: *[insert information]*;
- (f) We are not participating, as Bidders, in more than one Bid in this bidding process, other than alternative offers in accordance with the Bidding Documents;
- (g) Our firm, its affiliates or subsidiaries, including any subcontractors or suppliers for any part of the Contract, has not been declared ineligible by the Funding Source;
- (h) We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed; and
- (i) We understand that you are not bound to accept the Lowest Calculated Bid or any other Bid that you may receive.

- (j) We likewise certify/confirm that the undersigned, is the duly authorized representative of the bidder, and granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for the <u>[Name of Project]</u> of the <u>[Name of the Procuring Entity]</u>.
- (k) We acknowledge that failure to sign each and every page of this Bid Form, including the Bill of Quantities, shall be a ground for the rejection of our bid.

Name:
In the capacity of:
Signed:
Duly authorized to sign the Bid for and on behalf of:

Date:

### Statement of Availability of Key Personnel and Equipment

STATEMENT OF AVAILABILITY OF KEY PERSONNEL AND EQUIPMENT

[Date of Issuance]

To: Bases and Conversion Development Authority

Thru: Chairperson Bids and Awards Committee I Procurement Service – DBM Cristobal St., Paco, Manila

Dear \_\_\_\_\_:

In compliance with the requirements of the PS-DBM Bids and Awards Committee I for the bidding of the Construction of New Clark City Connecting Road to Industrial Park under PB 20-038-1 ("the Project"), we certify that **[Name of the Bidder]** has in its employ key personnel, such as Project Manager, Project Engineer, Bridge/Structural Engineer, Quantity Engineer, Materials Engineer II, Site Engineer, Electrical Engineer, Health and Safety Officer, Drainage Engineer and Geodetic Engineer, who will be engaged for the construction of the said Project. Further, we likewise certify the availability of equipment that **[Name of the Bidder]** owns, has under lease, and/or has under purchase agreement that may be used for the Project.

Very truly yours,

[Name of Authorized Representative] [Position] [Name of Bidder]

### List of Construction Key Personnel Proposed to be assigned to the Project

### LIST OF CONSTRUCTION KEY PERSONNEL PROPOSED TO BE ASSIGNED TO THE CONTRACT

Construction of New Clark City Connecting Road to Industrial Park under Public Bidding No.

20-038-1

Business Name Business Address

2

:

	Project	Project	Quantity	Bridge/Structural	Materials	Site	Electrical	Health and	Drainage
	Manager	Engineer	Engineer	Engineer	Engineer II	Engineer	Engineer	Safety Officer	Engineer
	U U	5	5	5	0	0	5	,	5
		-				-			
Na									
me									
rth									
Since (Current Co.)									
Employment									
1									
nse/ Accreditation from									
SC (for the Health and									
icer) DPWH Accreditation									
Experience in Proposed									
-									

Note: This List must be supported by individual resumes the following documents:

- 1. Individual resumes to show proof of the following:
  - a. that the proposed personnel meets the required relative experience

b. list of projects handled with the corresponding position and its inclusive years

of experience (e.g. Construction of Roads and/or Bridges, Project Manager, 2012-2017)

2. Photocopy of PRC Licenses/DOLE-OHSC/DPWH Accreditation.

Expired PRC License may be accepted provided that proof for the renewal of application is attached. Valid and renewed PRC license of all key personnel assigned must be submitted during Post-Qualification.

Submitted by	:	
		(Printed Name & Signature of Authorized Representative)
Designation	:	
U		
Date	:	

### List of Equipment, Owned or Leased and/or Under Purchase Agreement, Pledged to the Proposed Contract

### LIST OF EQUIPMENT, OWNED OR LEASED AND/OR UNDER PURCHASE AGREEMENT, PLEDGED TO THE PROPOSED CONTRACT

Construction of New Clark City Connecting Road to Industrial Park under Public Bidding No.

20-038-1.

Business Name : Business Address :

i cai	Capacity/Performance/Size	Plate No.	Body No.	Location	Condition	Proof C Less
						Image: state of the state

Note: This List must be supported by proof of ownership, lease and/or purchase agreement. For lease and purchase agreement, such proof must include a certification of availability of equipment from the lessor/vendor for the duration of the project.

Submitted by

:

2

2

(Printed Name & Signature of Authorized Representative)

Designation Date

### **Statement of Completed Similar Contracts**

#### STATEMENT OF SINGLE LARGEST COMPLETED CONTRACT(SLCC)

[Date]

Dear\_\_\_\_,

In compliance with the eligibility requirements for the bidding of the Construction of New Clark City Connecting Road to Industrial Park, this is to certify that [name and complete address of Bidder] has the following completed government and private contracts:

Tab No.	Name of Contract	Date of Contract	Contract Duration	Owner's Name and Address	Nature of Work	Contractor's Role (whether sole contractor, subcontractor or partner in a JV)	Total Contract Value at Award (in Ph <del>P</del> )	Date of Completion	Total Cont Value Com if app (in Pl

Yours sincerely,

[Signature over printed name of Authorized Representative] [Title] [Name of Firm] **Note:** This statement shall be s Proceed, Project Owner's Certif other than the Contractor or the (CPES) Final Rating, which mus with the private sector, an equiv supporting documents shall be the list of contracts appears in t

# **Statement of All On-Going Contracts**

#### STATEMENT OF ALL ON-GOING GOVERNMENT AND PRIVATE CONTRACTS, INCLUDING CONTRACTS AWARDED BUT NOT YET STARTED, IF ANY

[Date]

Dear

In compliance with the eligibility requirements for the bidding of the Construction of New Clark City Connecting Road to Industrial Park, this is to certify that **[name and complete address of Bidder]** has the following on-going government and private contracts. [Including contracts awarded but not yet started]:

Tab	Name of	Date of	Contract	Owner's Name	Nature of	Contractor's Role	Total Contract	[Estimated]	Т
No.	Contract	Contract	Duration	and Address	Work	(whether sole	Value at Award	Date of	Co
						contractor,	(in Ph <del>₽</del> )	Completion	Va
						subcontractor or	, , , , , , , , , , , , , , , , , , ,		Com
						partner in a JV)			if ap
						, ,			(in

Yours sincerely,

[Signature over printed name of Authorized Representative] [Title] [Name of Firm] Note: This statement shall be supported by contra proceed issued by the owners and Certificate of acc Owner's Project Engineer or in case the project mobilization stage, a certification in lieu of the certifi Owner or Owner's Project Engineer should be sub shall be numbered and tabbed in the same sequent this statement.

### **Omnibus Sworn Statement**

### **Omnibus Sworn Statement**

REPUBLIC OF THE PHILIPPINES ) CITY/MUNICIPALITY OF \_\_\_\_\_ ) S.S.

#### AFFIDAVIT

I, [Name of Affiant], of legal age, [Civil Status], [Nationality], and residing at [Address of Affiant], after having been duly sworn in accordance with law, do hereby depose and state that:

#### 1. Select one, delete the other:

*If a sole proprietorship:* I am the sole proprietor or authorized representative of [*Name of Bidder*] with office address at [address of Bidder];

If a partnership, corporation, cooperative, or joint venture: I am the duly authorized and designated representative of [Name of Bidder] with office address at [address of Bidder];

#### 2. Select one, delete the other:

If a sole proprietorship: As the owner and sole proprietor or authorized representative of [Name of Bidder], I have full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for [Name of the Project] of the [Name of the Procuring Entity] [insert "as shown in the attached duly notarized Special Power of Attorney" for the authorized representative];

If a partnership, corporation, cooperative, or joint venture: I am granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for [Name of the Project] of the [Name of the Procuring Entity], accompanied by the duly notarized Special Power of Attorney, Board/Partnership Resolution, or Secretary's Certificate, whichever is applicable;

- 3. *[Name of Bidder]* is not "blacklisted" or barred from bidding by the Government of the Philippines or any of its agencies, offices, corporations, or Local Government Units, foreign government/foreign or international financing institution whose blacklisting rules have been recognized by the Government Procurement Policy Board;
- 4. Each of the documents submitted in satisfaction of the bidding requirements is an authentic copy of the original, complete, and all statements and information provided therein are true and correct;
- 5. *[Name of Bidder]* is authorizing the Head of the Procuring Entity or its duly authorized representative(s) to verify all the documents submitted;

#### 6. Select one, delete the rest:

*If a sole proprietorship:* The owner or sole proprietor is not related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and

the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

*If a partnership or cooperative:* None of the officers and members of *[Name of Bidder]* is related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

*If a corporation or joint venture:* None of the officers, directors, and controlling stockholders of *[Name of Bidder]* is related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

- 7. [Name of Bidder] complies with existing labor laws and standards; and
- 8. [Name of Bidder] is aware of and has undertaken the following responsibilities as a Bidder:
  - a) Carefully examine all of the Bidding Documents;
  - b) Acknowledge all conditions, local or otherwise, affecting the implementation of the Contract;
  - c) Made an estimate of the facilities available and needed for the contract to be bid, if any; and
  - d) Inquire or secure Supplemental/Bid Bulletin(s) issued for the [Name of the Project].
- 9. [Name of Bidder] did not give or pay directly or indirectly, any commission, amount, fee, or any form of consideration, pecuniary or otherwise, to any person or official, personnel or representative of the government in relation to any procurement project or activity.
- 10. [Name of Bidder] hereby assigns the following contact number/s and e-mail address/es as the official telephone/fax number and contact reference of the company where the PS BAC and PS notices may be transmitted.

Telephone No/s. :	
Fax No/s. :	 
E-mail Add/s. :	
Mobile No/s. :	

It is understood that notice/s transmitted in any of the above-stated telephone/fax numbers and/or e-mail address/es are deemed received as of its transmittal and the reckoning period for the reglementary periods stated in the bidding documents and the revised Implementing Rules and Regulations of Republic Act No. 9184 shall commence from receipt thereof.

IN WITNESS WHEREOF, I have hereunto set my hand this \_\_ day of \_\_\_, 20\_\_ at \_\_\_\_\_, Philippines.

Bidder's Representative/Authorized Signatory

**SUBSCRIBED AND SWORN** to before me this \_\_\_\_ day of [month] [year] at [place of execution], Philippines. Affiant/s is/are personally known to me and was/were identified by me through competent evidence of identity as defined in the 2004 Rules on Notarial Practice (A.M. No. 02-8-13-SC). Affiant/s exhibited to me his/her [insert type of government identification card used], with his/her photograph and signature appearing thereon, with no. \_\_\_\_\_ and his/her Community Tax Certificate No. \_\_\_\_\_ issued on \_\_\_\_\_ at \_\_\_\_.

Witness my hand and seal this \_\_\_\_ day of [month] [year].

#### NAME OF NOTARY PUBLIC

Serial No. of Commission \_\_\_\_\_\_ Notary Public for \_\_\_\_\_ until \_\_\_\_\_ Roll of Attorneys No. \_\_\_\_\_ PTR No. \_\_\_, [date issued], [place issued] IBP No. \_\_\_, [date issued], [place issued] MCLE No. \_\_\_

Doc. No. \_\_\_\_ Page No. \_\_\_\_ Book No. \_\_\_\_ Series of \_\_\_\_\_

# Joint Venture Agreement

JOINT VENTURE AGREEMENT

#### KNOW ALL MEN BY THESE PRESENTS:

This JOINT VE	NTURE AGRE	EMENT (hereinafter	referred to as the "Agre	ement"), entered
into this	_ day of	20 at	City, Philippines	by and among:
existing under a at	nd by virtue of	a domestic corpo the laws of the Repu , represented by "; and -	oration duly organized, ublic of the Philippines, y its,	registered and with office address
and existing und address at	der and by virtu	a domes ue of the laws of the l	itic corporation duly org Republic of the Philippin , represen reinafter referred to as	anized, registered nes, with office nted by its
		- and -		
organized and a	visting under a	and by virtue of the la	a foreig	an corporation
represented by	its";	,,	, hereina	, Ifter referred to as

(Henceforth collectively referred to as the "Parties"

#### WITNESSETH: That

WHEREAS, the Procurement Service (PS) has recently published an Invitation to Apply for Eligibility and to Bid for the Supply and Delivery of \_\_\_\_\_\_ for the ;

WHEREAS, the parties have agreed to pool their resources together to form the \_\_\_\_\_\_\_ Joint Venture", hereinafter referred to as the Joint Venture, under the laws of the Philippines, for the purpose of participating in the abovementioned procurement of PS-DBM;

NOW, THEREFORE, for and in consideration of the foregoing premises and the covenants hereto set forth, the Parties have agreed as follows:

#### ARTICLE I ORGANIZATION OF THE JOINT VENTURE

SECTION 1. Formation – The Parties do hereby agree and bind themselves to establish, form and organize a Joint Venture pursuant to the laws of the Republic of the Philippines, in order for the JV to carry on the purposes and objectives for which it is created;

SECTION 2. Name – The name and style under which the JV shall be conducted is "\_\_\_\_\_\_";

SECTION 3. Principal Place of Business – The JV shall maintain its principal place of business at \_\_\_\_\_\_;

SECTION 4. Preparation and Documentation – The Parties shall secure and/or execute such certifications, documents, deeds and instruments as may be required by the laws of the Republic of the Philippines for the realization of the JV and in compliance with the Project. Further, they shall do all other acts and things requisite for the continuation of the JV pursuant to applicable laws;

SECTION 5. The Joint Venture shall be represented by the \_\_\_\_\_\_ in all biddings, related procurement transactions and other official dealings that it shall enter into with the PS-DBM and third parties, such transactions to include, among others, the submission of eligibility documents, bids, registration documents obtaining bonds, performing the principal contract in the event that the contract is awarded in favor of the Joint Venture, receipt of payment for goods delivered, and similar and related activities.

SECTION 6. The period of the Joint Venture shall begin upon execution of this Agreement and shall continue until the complete performance of its contractual obligations to PS-DBM, as described in Article II hereof, or upon its termination for material breach of any term or condition of this Agreement, by service of a written statement in English on the other Party, not less than 90 days prior to the intended date termination

#### ARTICLE II PURPOSE

SECTION 1. The primary purpose of the Joint Venture is to participate in the public bidding to be conducted by the DBM-PS Bids and Awards Committee for the supply and delivery of \_\_\_\_\_\_ for the \_\_\_\_\_\_.

SECTION 2. If the above-described contract/s is/are awarded to the Joint Venture, the Joint Venture shall undertake the performance thereof to PS-DBM, and such other incidental activities necessary for the completion of its contractual obligations.

#### ARTICLE III SOLIDARY LIABILITY OF THE PARTIES

SECTION 1. In the performance of the contract/s that may be awarded to the Joint Venture by the PS-DBM, and all other related activities/obligations, as described in Article II hereof, the Parties bind themselves jointly and solidarily, in the concept of solidarily debtors, subject to the right of reimbursement, as provided in the relevant provisions of the Civil Code of the Philippines.

#### ARTICLE IV CONTRIBUTION AND OTHER ARRANGEMENTS

SECTION 1. Contribution – The Parties shall contribute the amount of

\_\_\_\_\_ (Php ) to support the financial requirements of the Joint Venture, in the following proportion:

А.	-	Р	.00.
В.		<u>Р</u>	.00
TOTAL		Р	.00

Additional contributions to the Joint Venture shall be made as may be required for contract implementation. In addition, \_\_\_\_\_ shall contribute any labor and contract management requirements.

SECTION 2. Profit Sharing – The share of the Parties to the JV from any profit derived or obtained from the implementation and execution of the Project shall be distributed pro rata to each, in accordance with the contribution and resources each has provided to the JV;

SECTION 3. Liquidation and Distributions – Any sum remaining after deducting from the total of all moneys or benefits received for the performance of the contract, all costs incurred by the JV after award of the contract for the Project pursuant to the accounting practices established for the JV, shall be distributed in accordance with the relative balances in the accounts of each Party pursuant to Sec.1 of this Article upon completion, final accounting, termination and liquidation of the JV. In the event of liquidation and termination of JV, and after taking into account the shares of the Parties in all income, gain, deductions, expenses, and losses, should the account of a Party contain a negative balance, such Party shall contribute cash to the JV sufficient to restore the said balance to zero;

SECTION 4. Sharing of Burden of a Net Loss – In case a net loss is incurred, additional contributions shall be made by the Parties in accordance with their respective shares.

#### ARTICLE V

#### MISCELLANEOUS PROVISIONS

SECTION 1. The provisions of the Instructions to Bidders, Supplemental Bid Bulletin, and other bidding documents issued by the PS-DBM in relation to the contract described in Article II hereof, shall be deemed incorporated in this Agreement and made an integral part thereof.

SECTION 2. This Agreement shall be binding upon and inure to the benefit of the Parties and their respective successors and assigns.

SECTION 3. The Parties herein are duly represented by their authorized officers.

SECTION 4. Governing Law - This Agreement shall be governed by and construed according to the laws of the Republic of the Philippines. Venue of any court action arising from this Agreement shall be exclusively laid before the proper court of the \_\_\_\_\_ Philippines.

IN WITNESS WHEREOF, the parties have set their hands and affixed their signatures on the date and place first above-stated.

Signed in the Presence of:

#### ACKNOWLEDGMENT

REPUBLIC OF THE PHILIPPINES ) CITY/MUNICIPALITY OF \_\_\_\_\_) S.S. PROVINCE OF (in the case of Municipality)

BEFORE ME, a Notary Public for and in the City/Municipality of <u>(indicate also the Province in the case of Municipality</u>, this <u>day of (month & year)</u> personally appeared the following:

NameID Name, Number and Validity Date

Known to me and to me known to be the same persons who executed the foregoing instrument and they acknowledge to me that the same is their free and voluntary act and deed and that of the corporation(s) they represent.

This instrument refers to a Joint Venture Agreement consisting of \_\_\_\_\_ pages, including the page on which this Acknowledgement is written, and signed by the parties and their instrumental witnesses.

WITNESS MY HAND AND NOTARIAL SEAL on the place and on the date first above written.

(Notary Public)

Until \_\_\_\_\_\_ PTR No. \_\_\_\_\_\_ Date

Place	
TIN	
IBP	

Doc. No. ; Page No. ; Book No. ; Series of 20\_\_.

Note: The competent evidence of identity for Notary shall comply with Sec. 12 (a), Rule II of the 2004 Rules on Notarial Practice. "Sec. 12. Competent Evidence of Identity – The phrase "competent evidence of identity" refers to the identification of an individual based on at least one current identification document issued by an official agency bearing the photograph and signature of the individual, such as but license, Professional Regulations Commission ID, National not limited to, passport, driver's Bureau of Investigation clearance, police clearance, postal ID, voter's ID, Barangay certification, Government Insurance System (GSIS) e-card, Social Security System (SSS) card, Philhealth card, senior Service and citizen card, Overseas Workers Welfare Administration (OWWA) ID, OFW ID, seaman's book, alien certificate of registration/immigrant certificate of registration, government office ID, certification from the National Council for the Welfare of Disabled Persons (NCWDP), Department of Social Welfare and Development (DSWD) certification;

### **Pro-forma Letter for Withdrawal of Documents**

SUPPLIER'S LETTERHEAD

### (PROFORMA LETTER FOR WITHDRAWAL OF DOCUMENTS)

Date

Chairperson Procurement Service Bids and Awards Committee I Paco, Manila

Dear Sir:

 This has reference to Public Bidding No. for (Name of Project)
 Name

 of Company)
 respectfully requests for the following:

- () Withdraw of Bid Submissions
- () Refund of Bid Security
  - (Attached is a photocopy of the Procurement Service Official Receipt)
- () Cancellation of Credit Line Certificate

It is understood that \_\_\_\_\_\_waives its right to file any motion for reconsideration and/or protest in connection with the above-cited Public Bidding Project.

Thank you.

Very truly yours,

Authorized Signatory for the Company

### Form of Performance Security (Bank Guarantee)

#### To : Bases Conversion and Development Authority

WHEREAS, \_\_\_\_\_(Name and Address of Supplier) \_\_\_\_\_ (hereinafter called "the Supplier") has undertaken, in pursuance of Purchase Order No. \_\_\_\_\_\_ dated \_\_\_\_\_ to execute (Name of Contract and Brief Description) (hereinafter called "the

Contract");

AND WHEREAS, it has been stipulated by you in the said Contract that the Supplier shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract;

AND WHEREAS, we have agreed to give the Supplier such a Bank Guarantee;

NOW THEREFORE, we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Supplier, up to a total of [Amount of Guarantee] proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of [Amount of Guarantee] as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Supplier before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract to be performed thereunder or of any of the Contract documents which may be made between you and the Supplier shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid until the date of issue of the Final Acceptance [Inspection, & Certification of Acceptance Report (I.C.A.R.)].

SIGNATURE AND SEAL OF THE GUARANTOR NAME OF BANK ADDRESS DATE

# **Bid Securing Declaration Form**

### REPUBLIC OF THE PHILIPPINES ) CITY OF \_\_\_\_\_\_ ) S.S.

#### BID-SECURING DECLARATION Invitation to Bid Public Bidding No. 20-038-1 Construction of New Clark City Connecting Road to Industrial Park

To: Bases and Conversion Development Authority

Thru: Chairperson

Bids and Awards Committee I Procurement Service – DBM Cristobal St., Paco, Manila

I/We, the undersigned, declare that:

- 1. I/We understand that, according to your conditions, bids must be supported by a Bid Security, which may be in the form of a Bid-Securing Declaration.
- 2. I/We accept that: (a) I/we will be automatically disqualified from bidding for any contract with any procuring entity for a period of two (2) years upon receipt of your Blacklisting Order; and, (b) I/we will pay the applicable fine provided under Section 6 of the Guidelines on the Use of Bid Securing Declaration, within fifteen (15) days from receipt of written demand by the procuring entity for the commission of acts resulting to the enforcement of the bid securing declaration under Sections 23.1(b), 34.2, 40.1 and 69.1, except 69.1 (f), of the IRR of RA 9184; without prejudice to other legal action the government may undertake:
- 3. I/We understand that this Bid-Securing Declaration shall cease to be valid on the following circumstances:
  - (a) Upon expiration of the bid validity period, or any extension thereof pursuant to your request;
  - (b) I am/we are declared ineligible or post-disqualified upon receipt of your notice to such effect, and (i) I/we failed to timely file a request for reconsideration or (ii) I/we filed a waiver to avail of said right;
  - (c) I am/we are declared as the bidder with the Lowest Calculated Responsive Bid, and I/we have furnished the performance security and signed the Contract.

**IN WITNESS WHEREOF**, I/We have hereunto set my/our hand/s this \_\_\_\_\_ day of [month] [year] at [place of execution].

#### [Insert NAME OF BIDDER'S AUTHORIZED REPRESENTATIVE] [Insert signatory's legal capacity]

Affiant

**SUBSCRIBED AND SWORN** to before me this \_\_\_\_ day of [month] [year] at [place of execution], Philippines. Affiant/s is/are personally known to me and was/were identified by me through competent evidence of identity as defined in the 2004 Rules on Notarial Practice (A.M. No. 02-8-13-SC). Affiant/s exhibited to me his/her [insert type of government identification card used], with his/her photograph and signature appearing thereon, with no. \_\_\_\_\_.

Witness my hand and seal this \_\_\_\_ day of [month] [year].

NAME OF NOTARY PUBLIC

Serial No. of Commission \_\_\_\_\_\_ Notary Public for \_\_\_\_\_ until \_\_\_\_\_ Roll of Attorneys No. \_\_\_\_\_ PTR No. \_\_\_, [date issued], [place issued] IBP No. \_\_\_, [date issued], [place issued] Doc. No. \_\_\_\_ Page No. \_\_\_\_ Book No. \_\_\_\_ Series of \_\_\_\_.

# Form of Contract Agreement
#### **Contract Agreement for the**

#### **Construction of New Clark City Connecting Road to Industrial Park**

THIS AGREEMENT, made this [insert date] day of [insert month], [insert year] between [name and address of PROCURING ENTITY](hereinafter called the "Entity") and [name and address of Contractor] (hereinafter called the "Contractor").

WHEREAS, the Entity is desirous that the Contractor execute [name and identification number of contract] (hereinafter called "the Works") and the Entity has accepted the Bid for [insert the amount in specified currency in numbers and words] by the Contractor for the execution and completion of such Works and the remedying of any defects therein.

#### NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

- 1. In this Agreement, words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.
- 2. The following documents shall be attached, deemed to form, and be read and construed as integral part of this Agreement, to wit:
  - (a) General and Special Conditions of Contract;
  - (b) Drawings/Plans;
  - (c) Specifications;
  - (d) Invitation to Bid;
  - (e) Instructions to Bidders;
  - (f) Bid Data Sheet;
  - (g) Addenda and/or Supplemental/Bid Bulletins, if any;
  - (h) Bid form, including all the documents/statements contained in the Bidder's bidding envelopes, as annexes, and all other documents submitted (e.g., Bidder's response to request for clarifications on the bid), including corrections to the bid, if any, resulting from the Procuring Entity's bid evaluation;
  - (i) Eligibility requirements, documents and/or statements;
  - (j) Performance Security;
  - (k) Notice of Award of Contract and the Bidder's conforme thereto;
  - (l) Other contract documents that may be required by existing laws and/or the Entity.
- 3. In consideration of the payments to be made by the Entity to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Entity to

execute and complete the Works and remedy any defects therein in conformity with the provisions of this Contract in all respects.

4. The Entity hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects wherein, the Contract Price or such other sum as may become payable under the provisions of this Contract at the times and in the manner prescribed by this Contract.

IN WITNESS whereof the parties thereto have caused this Agreement to be executed the day and year first before written.

Signed, sealed, delivered by \_\_\_\_\_\_ (for the Entity)

Signed, sealed, delivered by \_\_\_\_\_\_the \_\_\_\_\_(for the Contractor).

Binding Signature of Procuring Entity

Binding Signature of Contractor

[Addendum showing the corrections, if any, made during the Bid evaluation should be attached with this agreement]

# **Detailed Estimate Form**

(In a Separate Volume) (To be included in the Financial Envelope)

# Form for Day works Rates (To be included in the Financial Envelope)

# DAYWORKS SCHEDULE

#### LABOR

# Construction of New Clark City Connecting Road to Industrial Park

NO.	TYPE OF LABOR	UNIT	RATE
1	Foreman	Hour	
2	Skilled Laborer	Hour	
3	Unskilled Laborer	Hour	
4	Driver	Hour	
5	Heavy Equipment Operator	Hour	

# DAYWORKS SCHEDULE

#### MATERIALS

# Construction of New Clark City Connecting Road to Industrial Park

NO.	TYPE OF MATERIALS	UNIT	RATE
1	Cement	Bag	
2	Fine Aggregate	Cu.m.	
3	Coarse Aggregate	Cu.m.	
4	Reinforcing Steel Bars	Kg.	
5	Coco Lumber	Bd.ft.	
6	Assorted CWN	Kg.	
7	G.I. Tie Wire, Ga. 16	Kg.	
8	Plywood	piece	
9	RC Pipe Culvert	l.m.	
10	Boulder	Cu.m.	
11	Common Borrow Materials	Cu.m.	

# DAYWORKS SCHEDULE

#### EQUIPMENT

# Construction of New Clark City Connecting Road to Industrial Park

NO.	TYPE OF EQUIPMENT	UNIT	RATE
1	Concrete Mixer, 1 Bagger	Hour	
2	Excavator, 0.5 cu.m.	Hour	
3 Concrete Vibrator		Hour	
4	Rough Terrain Crane, 10 tonner	Hour	
5	Utility Truck	Hour	
6	Roller, 1 tonner	Hour	
7	Bar Cutter	Hour	
8	Bulldozer	Hour	
9	Wheel Loader	Hour	
10	Dump Truck	Hour	
11	Backhoe	Hour	

Format of Curriculum Vitae

Name of the Procuring Entity Project Reference Number Name of the Project PROCUREMENT SERVICE

: PB No. 20-038-1

Construction of New Clark City Connecting Road to Industrial Park

#### KEY PERSONNEL (FORMAT OF BIO-DATA)

:

Give the detailed information of the following personnel who are scheduled to be assigned as full-time field staff for the project. Fill up a form for each person.

1.	Name	:
2.	Nationality	:
3.	Education and Degrees	:
4. 5	Proposed Position	: (months)
5.	Firm	year(s)(months) (years)
		To(months)
6.	Years of Related Experience for the proposed position	:(years)
7.	List of Projects Handled	: (Use additional sheet/s if necessary)
	Name of Project :	
	Name of Owner :	
	Type of Project :	
	Position :	
	Period of Assignment :	

In the event that <u>(Name of the Bidder)</u> is awarded the contract for <u>(Name of the Project)</u>, firmly commit to assume the post of <u>Designation</u>.

Signature of Key Personnel

One of the requirements from the bidder to be included in its Technical Envelope is a list of contractor's key personnel (viz., Project Manager, Project Engineers, Materials Engineers, and Foremen), to be assigned to the contract to be bid, with their complete qualification and experience data (including the key personnel's signed written commitment to work for the project once awarded the contract).

