Republic of the Philippines

ZAMBOANGA CITY WATER DISTRICT

Pilar Street, Zamboanga City

BAGONG PILIPINAS

-TECHNICAL SPECIFICATIONS-
& Scope of Works

for the

PROPOSED FEEDERLINE IN VARIOUS LOCATIONS IN THE CITY FOR WATER SERVICE EXPANSION

TECHNICAL SERVICES GROUP
ENGINEERING & CONSTRUCTION DEPARTMENT
DESIGN DIVISION

FEBRUARY 2025

Version_1

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BACKGROUND

The Technical Services Group through the ZCWD Management, conceptualized this project that aims to expand the water services in the City. This project is comprising of several pipelaying works of 50mm PE Tubing, 75mm PVC Pipe, and 100mm PVC Pipe and 150mm PVC in various locations in this city where fundings have been approved by the ZCWD Board of Directors. Those feederlines which have been included in the project were ranked and identified to be the most economically, technically feasible and financially viable to implement. The total number of "potential markets" can be derived from this project is estimated to be not less than 1,140 connections with the following breakdown:

Feederline Locations	Potential Market
1. PROPOSED FEEDERLINE AT UCHAI, SINUNUC	164 HHs
2. PROPOSED 100mmØ FEEDERLINE AT OUR LADY OF ASSUMPTION, TALISAYAN OLD HIGHWAY	99 HHs
3. PROPOSED FEEDRLINE AT AYALA GYM, AYALA ZAMBOANGA CITY	21 HHs
4. PROPOSED FEEDERLINE AT PUROK 6DA, TALISAYAN	88 HHs
5. PROPOSED FEEDERLINE AT LOBREGAT VILLAGE, UPPER CALARIAN	46 HHs
6. PROPOSED FEEDRLINE AT OUR LADY OF ASSUMPTION, AYALA	123 HHs
7. PROPOSED 150mmØ PVC DISTRIBUTION LINE CONNECTING BUNGUIAO TOUWA PROJECT AND EXISTING LINE AT SANGALI	Total of 173HHs along the pipeline project plus 426 HHs within the existing Sangali Feederline and including the Fishing Port
TOTAL POTENTIAL MARKET	1,140 HHs.

As a background, a Board Resolution No. 029, Series of 2023, dated February 21, 2023, was approved to consolidate the 5-Million and 6-Million funds (total of P11,000,000.00) intended for the feederline project - **PROPOSED FEEDERLINES IN VARIOUS LOCATIONS IN THE CITY FOR WATER SERVICE EXPANSION** to be implemented by Administration, which have been allocated through Board Resolution No. 013 Series of 2023 and Board Resolution No. 014 Series 2023, respectively.

A Board Resolution No. 133 Series of 2024 was approved in August 2024 approving the revision of the components of the ***PROPOSED FEEDERLINES IN VARIOUS LOCATIONS IN THE CITY FOR WATER SERVICE EXPANSION*** without revision in the total estimated project cost of Php11,000,000.00 by replacing some components with the proposed feederline at Sangali to maximize the water source of the newly turnover Tourism Water Supply Infrastructure Project (TouWa) at Sumidero, Bunguiao. The following were the revised components:

Feederline Locations	Length & Size
1. PROPOSED FEEDERLINE AT UCHAI, SINUNUC	395.63Ln.M.-75mmØ uPVC Pipe
2. PROPOSED 100mmØ FEEDERLINE AT OUR LADY OF ASSUMPTION, TALISAYAN OLD HIGHWAY	449.33Ln.M.-100mmØ uPVC Pipe
3. PROPOSED FEEDRLINE AT AYALA GYM, AYALA ZAMBOANGA CITY	115.90Ln.M.-50mmØ P.E. Tubing
4. PROPOSED FEEDERLINE AT PUROK 6DA, TALISAYAN	1,412.00Ln.M.-100mmØ uPVC Pipe
5. PROPOSED FEEDERLINE AT LOBREGAT VILLAGE, UPPER CALARIAN	204.13Ln.M.-75mmØ uPVC Pipe
6. PROPOSED FEEDRLINE AT OUR LADY OF ASSUMPTION, AYALA	1,106.57Ln.M.-100mmØ uPVC Pipe
7. PROPOSED 150mmØ PVC DISTRIBUTION LINE CONNECTING BUNGUIAO TOUWA PROJECT AND EXISTING LINE AT SANGALI	1,825.56Ln.M.- 150mmØ PVC-O Pipe
TOTAL LENGTH	**5,509.12 Ln.M.**

At first, the project was planned to implement by Administration, the End-user was able to purchase some of the construction materials required for the project. Although the Implementing Agency – the ZCWD, complies with the requirements as set forth under the Appendix 1 – *Revised Guidelines for the Implementation of Infrastructure Projects by Administration* of the revised IRR of RA 9184, it was observed that the purchasing of the construction materials causes the delay in the project implementation which results to the loss of opportunity to expand water services and increase the sales of the ZCWD. As a result, the ZCWD Board of Directors directed the management to implement the said project "by Contract" pursuant to the updated IRR of RA 9184.

To this end, a Board Resolution No. 208 Series of 2024 was approved on December 26, 2024, a resolution approving the change in mode of implementation from "By Administration" to "By Contract" as well as the change in project cost/ABC due to the adjustment in the Overhead Contingencies & Miscellaneous (OCM), inclusion of Contractor's Profit and Value Added Tax (VAT) mark-ups to be in compliance with the DPWH DO 197 Series of 2016 – a Guidelines in the preparation of the Approved Budget for the Contract (ABC). In the same Board Resolution, it was approved that the materials purchased already will be utilized in the same project by turning it over to the winning bidder, hence, these materials are not included in the ABC of the project to be bid.

Nonetheless, the ABC of the project includes the materials requirements that were not yet procured by the ZCWD, the manpower requirements, the equipment components as well as the OCM, Contractor's Profit and VAT mark-ups that comply with the provision of the DPWH DO 197 Series of 2016.

I. GENERAL BIDDING REQUIREMENTS

1.1. All eligibility documents shall conform to the requirements stipulated in the Republic Act 9184 & its Revised Implementing Rules and Regulation.

1.2. Statement of the bidder's Single Largest Completed Contract (SLCC) similar to the contract to be bid shall refer to CONSTRUCTION OF WATER SUPPLY SYSTEM particularly laying/installation of water pipeline project.

1.3. For single contractor, PCAB LICENSE shall be in compliance with the DTI PCAB Categorization Table, Board Resolution No. 201 Series of 2017. For this project, the PCAB License shall be GE-4 (Water Supply) Classification with Size Range Small B.

1.4. For Joint Venture bidders, the JV bidders shall submit a JVA in accordance with RA 4566 and its IRR. Joint Venture bidders' eligibility requirements for infrastructure projects shall be in accordance with the section 23 of the Updated Revised IRR of RA 9184.

1.5. For Equipment & Key Personnel requirements please refer to the Bidding Documents.

1.6. The Bidder may subcontract portions of the Project to the extent allowed by the Procuring Entity as stated in the Philippine Bidding Documents (PBD), but in no case more than fifty percent (50%) of the Project. All subcontracting arrangements should be disclosed at the time of bidding, and subcontractors shall be identified in the bidding documents submitted by the eligible bidder. Subcontractors shall also pass the eligibility check for the portions of the contract that they will undertake.

1.7. GCC Clause 14 of this project states that "Materials and equipment delivered on the site but not completely put in place shall be included for payment". The payment for the materials and equipment (equipment to be installed in the project) shall be made with the following conditions as partially adopted from the DPWH Department Order No. 12 Series of 1987 Re: Partial Payment of Materials-On-Site:

1. That the contractor should apply in writing for such partial payment using the standard request form as attached in DPWH DO 12 Series of 1987.

2. That the ZCWD Head of the Procuring Entity approves the above request following its review, inspection, valuation, and recommendation by the ZCWD Project Engineer concerned;

3. That partial payment to the contractor shall be up to a maximum of seventy percent (70%) of the invoiced cost of the materials or seventy percent (70%) of the cost of these materials as determined from the bid price of the work item to which they will be incorporated, whichever is lower.

4. That the quantities of these materials shall not exceed the requirements of the Project;

5. That the contractor shall remain principally responsible for the safekeeping of these materials and shall be solely responsible for any loss, damage, or injury to them for whatever cause;

6. That these materials shall pass the required quality test on construction

materials;

7. The partial payment to the contractor shall be made by inclusion of the same in his/her regular progress billing by adding the authorized value of these materials as determined per item (3) above to the net amount of the regular billing;

8. That the partial payment given per item above shall be fully deducted from the contractor's next immediate monthly billing without prejudice to his/her submitting another request for payment upon submission/approval of another written request as described in item (1) above; and that subsequent payments and recoupments shall be as afore-described.

II. GENERAL SPECIFICATION

2.1 The pipe laying components of this project shall be implemented in accordance with the latest established standards set by LWUA and as indicated in the plans and bill of quantities. While the backfilling, compaction, restoration and concreting works shall follow the latest edition Department of Public Works & Highways (DPWH) Standard Specifications for public works & highways following its schedule of Minimum Test Requirements.

In the case of slight inconsistencies between the plans provided and LWUA standards, the discretion shall be based depending on the complexity of the situation and on the decision of ZCWD project in-charge (Technical Services Group)

2.2 All leakages caused by the implementation of the pipelaying project must be reported to ZCWD for immediate assessment. The material, equipment and labor components of the immediate repair works shall be provided and shouldered by the contractor once assessed culpable to the pipeline damage. The contractor shall organize a leak repair team within its manpower to cater the immediate leak repair. Leakages shall not be a reason for stoppage of work. It shall be the responsibility of the contractor to complete the project amidst any impediments that will arise during the implementation phase. Only force majeure shall be sufficient reason for time extension.

2.3 Leakages on the ZCWD existing physical asset that occurs in the course of the project's activities, shall be computed with a corresponding amount of the volume that continuously went to leak and shall be deductible against the monies due to the Contractor as well as the manpower, materials and equipment that will be used in the leak repair shall also be shouldered by the Contractor, this is in accordance with the Section 11 of RA 8041 otherwise known as the Water Crisis Act. The volume of water wasted during the leak shall be computed by means of Torricelli's Theorem as follows:

$Q = C_dAV$ where $V = \sqrt{2gh}$, (Velocity of water)

Q=flow of leakage
g=9.81m/s^2 (gravity in S.I.)
h = pressure head (pressure within the area)
A = area of opening (leak opening)
C_d = coefficient of discharge (average)

Volume of leak = Q x Duration of Leak before it was completely repaired

2.4 Any equipment breakdown or damaged during the implementation of the project shall subject to immediate replacement at the cost of the contractor as this will not toll the running of the period to complete the works called for under this Technical Specifications. Delays will be subjected to liquidated damages provided in Section 68 and Annex E of the Updated Revised IRR of RA 9184.

2.5 Failure of the contractor to abide on all the provisions stipulated herein shall give rise to the right of the project engineer to order stoppage of work while the period

to complete the project shall continue to run, in addition to the penalties that may be imposed by ZCWD and/or local and national government agencies for non-compliance of this provision.

2.6 The contractor shall furnish As-Built Plan as part of the requirement for issuance of Completion Certificate and Final Billing payment.

2.7 The contractor's site engineer shall prepare and submit a daily report reflecting the following information with concurrence of this Office Project In-Charge:

- Weather condition
- Activities for the day reflecting all the detail of the actual works performed. (It shall show the plan vs. actual)
- Breakdown of utilized equipment
- Breakdown of manpower
- Materials utilized and delivered on site
- Any other details relevant to the executed activities.

2.8 In cases where the delay reaches 5% of the planned activities, the contractor shall submit a CATCH UP PLAN the following day reckoned from the date of the delay incurred. The "catch-up plan" shall cover the left-behind activities of the preceding week and the remaining works.

2.9 All materials to be used for this contract shall be inspected, tested and accepted by the ZCWD engineer. Failure to comply with this provision, the implementing unit-Mainline Expansion & Rehabilitation Division (MERD) shall have the right to order "REMOVE AND REPLACE" the said materials at the expense of the contractor with the period continue to run and without time extension. The actual testing must be witnessed by the ZCWD Engineer. Manufacturers and Material Testing Certificate shall be submitted to this effect.

2.10 In relation to section 2.9 of this Technical Specifications, the winning bidder/contractor shall provide Materials Engineer, who shall be present during the inspection and testing of construction materials.

2.11 The contractor cannot proceed with the next work item unless he can present that the materials indeed passed the testing requirements, in which case, the project engineer has the right to demand from the contractor, otherwise, the project engineer may order the stoppage of work while the period to complete the project shall continue to run.

2.12 Material Testing for Structural Concrete, Reinforcements and Structural Steel, Pavement Restoration items is required as per testing standard of DPWH (Department of Public Works & Highways).

2.13 All *Items of Works* for this project shall include all the necessary equipment, manpower and materials to implement and to complete it; and this shall be considered and anticipated by the Contractor in their financial bid offer. Hence, any additional equipment, manpower and/or materials which have been used in the completion of any *Item of Work* shall be at no extra cost to ZCWD.

2.14 The Contractor shall respond to the public's complaints immediately and they shall log all the complaints that they have received from the public or even from the ZCWD. They shall indicate the date when the complaint/issue was received, name of complainant, the nature of complaint, the location, the complainant's contact details, the contractor's action taken, date when the action was taken and the resources utilized in addressing the same. Further, the contractor shall submit this in a form of report to ZCWD every month.

2.15 The contractor shall also prepare a Contractor's Environmental Management plan that shall detail the specifications for dust control, erosion and sediment control, avoidance of casual standing water, management of solid wastes, workers' camp sanitation, pollution from oil, grease, fuel spills, and other materials due to the operation of construction machineries, safety and traffic management, avoidance of inconveniences to the public, air and noise pollution control. It shall also include guidance on the proper design of the construction zone, careful management of stockpiles, vegetation, topsoil, and vehicles and machinery. The contractor shall also designate its Construction Pollution Control Officer who shall monitor compliance with the conditions of the project's Environmental Compliance Certificate (ECC) during the construction phase and submit a Self-Monitoring Report of its compliance to the CEMP to ZCWD every month.

2.16 The project implementation shall be in accordance with the Zamboanga City Ordinance No. 309 "*An Ordinance Regulating the Excavation and Repavement of Excavated Portions of Roads/Streets in the City of Zamboanga and Prescribing Fees and Penalty Therefore*". For working scheduling, see Section V of this Technical Specifications. The conditions of the said Ordinance shall be observed such as, but not limited to, no landfill construction materials will be deposited in the street; all holes or excavation shall be duly covered by Steel Plate with not less than 3/4 inches thickness (capable to carry AASHTO HS-20 Traffic Load) during the day to make it passable to the riding public; and repavement of the portion affected shall be completed within 30 days after the completion of the excavation provided, that the excavation, shall not completely obstruct traffic flow in the area.

2.17 Water service interruption schedule for interconnection works shall be coordinated and approved by the ZCWD management. Interruption notice shall strictly follow the LWUA Memorandum Circular No. 005-18, a Circular requiring the Local Water Districts to announce the scheduled water service interruptions at least three (3) days before the scheduled interruption through any means as stated in the said Circular. Hence, the Contractor shall be prepared with the necessary manpower, equipment and materials prior the request for water service interruption and shall consider giving ample time for the interruption request to be assessed, evaluated and approved by ZCWD prior the minimum three (3) days posting of notice.

2.18 The Bill of Quantities (BOQ) prevails in all issues relating to pay items of work. The contractor shall supply the needed materials, equipment & manpower to complete the quantity stated in the BOQ with specifications as stated herein. For deficiency in the contractor's detailed estimate, the contractor shall borne the expenses for the deficiency made in the detailed estimates (materials, manpower

or equipment) to complete the quantity stated in the BOQ. For unused materials, equipment or manpower specified in the detailed estimates of the contractor shall be subject to deduction.

2.19 A list of construction materials (partial material requirement only) which have been purchased already by the ZCWD, is provided in this Technical Specifications for reference and these materials are for turn over to the winning bidder and therefore this is not included in the Approved Budget for the Contract of this project to be bid. All construction materials in the list shall be utilized in the project implementation, thus, the Contractor are not allowed to supply materials which are in the list, except the material requirements exceeded the quantity in the list, otherwise it will be deductive from the Contractor during the project implementation. To put it briefly, in the preparation of bidder's financial bid or estimates, the bidders shall utilize the available materials in the list and place it in the bidder's financial bid at zero cost. Other materials not found in the list and/or materials exceed the requirement in the list can be included in the bidder's financial bid cost.

2.20 OGM 2025-02-01, dated January 2025 shall be implemented, it is a directive regarding the retrieval, sorting and disposal of excavated materials which directs the following:

Retrieval of Materials:

a. All pipes, fittings, and appurtenances retrieved from the excavation activities must be turned over to the Property & Warehousing Section on the same day of activity or the following day, whichever is practicable; and

b. Native Materials such as aggregates and concrete pavements debris must be transported and dumped at the unfilled portion of the ZCWD Cabatangan Lot, Lupong Road.

ZCWD Supervising Engineers, Principal Engineers, Project Engineers are responsible for:

b. Ensuring compliance with this directive the memorandum OGM 2025-02-01 and with this Technical Specifications;

c. Promptly inform their respective superiors – Mainline Expansion & Rehabilitation Division Manager, Engineering & Construction Department Manager & the Assistant General Manager of the Technical Services Group about any unusual excavated materials encountered (metallic or suspected vintage bomb or equivalent), allowing for proper assessment and appropriate action to be taken;

d. Develop work process on the proper coordination with the Property & Warehousing Section to facilitate the sorting and inventory process;

3.1 FEES AND PERMITS shall include obtaining all permits and the *Environmental Compliance Certificate (ECC).*

3.1.1 All necessary permits, clearances and performance bond with the DPWH, City office, DENR, local and national government clearances and other documents necessary for the implementation of the project including incidental expenses shall be borne and processed by the contractor in coordination with the implementing unit of ZCWD except for the ECC which shall be processed by the ZCWD and to be paid by the contractor (to be deducted during the progress billing). The expense for the permits and ECC shall be included & chargeable to in the OCM, hence shall not be a separate pay item.

3.1.2 The barangays and stakeholders where the project components are located must all be well-informed and documented through writing as to the definite date of TAKE-OFF.

3.1.3 Continuous coordination meetings with the traffic management unit may be realized during the implementation of the project up to its completion if necessary.

3.1.4 Obstructions concerning electrical light post, drainage, telecommunication underground wirings, pavement, water and sewer pipeline, etc. will be coordinated by the contractor with the concerned agencies in coordination with the Technical Services Group of ZCWD.

3.2 MOBILIZATION/DEMOBILIZATION

This shall include the necessary arrangement to mobilize initial activities on site such as; preparation of the working area at site, mobilization of manpower & equipment

3.2.1 Upon demobilization, all restored area shall be cleared from debris, tools, equipment, barricades, excavated materials and all other supplies that were used during project implementation and dismantling all temporary storage facilities (if any) and all other temporary office facilities; and

3.3 TEMPORARY FACILITIES

Temporary facilities include the construction of site facilities and other necessary components to complete the job. The detail for temporary facilities is reflected in the detailed engineering plan. However, the contractor may construct larger temporary facilities than what is reflected in the plan should deemed necessary without additional cost to the ZCWD.

3.4 CONSTRUCTION SAFETY AND HEALTH

The contractor shall process and seek the approval from the Department of Labor and Employment (DOLE) for the **Construction Safety and Health Program** for this project. This item shall include the provision of the **Safety Officers**, the provision of warning devices, safety and warning signage, barricades, first aid kit and personal protective equipment (PPE) for the workers.

3.4.1 The contractor shall provide barricades to ensure enclosure and safety in all working areas and this shall be included in this item of work.

3.4.2 Regardless of project suspension and any impediments, the contractor shall maintain the safety measures and cleanliness at any of the working areas of the project.

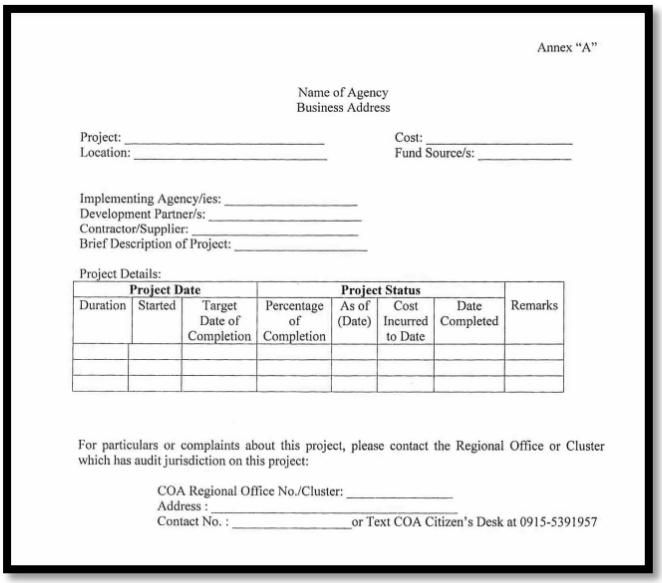
3.4.3 The contractor shall implement the Construction Safety and Health Program in compliance with DOLE D.O. No. 13, Series of 1998 and the DPWH DO 136 Series of 2022 the "Revised Construction Safety Guidelines for the Implementation of Infrastructure Projects during the Covid-19 Public Health Crisis or the latest DPWH issuance or Department Order with regards to the Implementation of Infrastructure Projects during the Public Health Crisis or emergency (if applicable).

3.5 CONSTRUCTION OF PROJECT BILLBOARD/SIGNAGES

This item of work is in lot unit which includes the construction of at least fourteen (14) sets project signages & billboards by the contractor, placed on-site in accordance with the guidelines as specified in COA Circular No. 2013-044 dated Jan. 30, 2013. The frame for billboards may be made from coco lumber or any lumber as long as the same shall stand for the entire duration of project implementation. The exact location for the installation of the fourteen (14) billboards/signages shall be determined by ZCWD engineer/project in-charge but it shall be installed at the beginning and end of pipeline project components.

For infrastructure projects, a tarpaulin project signboard must be suitably framed for outdoor display at the project location, and shall be posted as soon as the award has been made. The design and format of the project signboard tarpaulin, as shown in Annex "A" of the said COA Circular shall have the following specifications:

Tarpaulin, white, 8ft x 8ft;
Resolution: 70dpi
Font: Helvetica;
Font Size: Main Information – 3"
Sub-Information- 1"
Font Color: Black



Annex "A"

Name of Agency
Business Address

Project: _____ Cost: _____
Location: _____ Fund Source/s: _____

Implementing Agency/ies: _____
Development Partner/s: _____
Contractor/Supplier: _____
Brief Description of Project: _____

Project Details:

Project Date			Project Status				
Duration	Started	Target Date of Completion	Percentage of Completion	As of (Date)	Cost Incurred to Date	Date Completed	Remarks

For particulars or complaints about this project, please contact the Regional Office or Cluster which has audit jurisdiction on this project:

COA Regional Office No./Cluster: _____
Address : _____
Contact No. : _____or Text COA Citizen's Desk at 0915-5391957

3.6 AS-STAKED SURVEY, PREPARATION OF AS-STAKED PLAN/ CONSTRUCTION DRAWING, LAYOUTING AND LINE AND GRADE/POTHOLING

3.6.1 This item includes the actual site survey, preparation of As-staked Plan or Construction Plan, layouting, line and grade, potholing not more than 50-meter interval distance and preparation of *As-staked plan.* However, the contractor may opt to do the potholing in a short interval for more accurate results without additional expense to ZCWD.

3.6.2 The submission of the as-staked plan shall be mandatory prior to execution of asphalt/concrete cutting & demolition works.

3.6.3 As-staked plan/ Construction Drawing shall be a new set of plan depicting the actual field condition and requirements derived from the "As-Staked" survey conducted by the Contractor.

3.6.4 The "As-Staked" plan shall be prepared by the Contractor based on the pre-construction survey jointly conducted by the Contractor and ZCWD - Engineering & Construction Department (ECD). Upon issuance of the Notice to Proceed (NTP) for a contract, the ZCWD shall provide the Contractor with an editable CAD file (electronic/soft copy) of the approved original plan of the project to facilitate the preparation of "As-Staked" plan. The plan shall be reviewed and evaluated by the Technical Services Group of ZCWD and shall be approved by the ZCWD management.

3.6.5 PROGRAM OF WORK based on the approved as-staked plan or construction drawing shall also be submitted by the Contractor which includes but not limited to the order in which it intends to carry out the work; Number and names of personnel to be assigned for each stage of work per site (for simultaneous implementation); list of equipment required on site for each stage of work per site; and other relevant activities to be performed based on the actual site conditions.

3.6.6 The cost for the survey and preparation of construction drawing shall be borne by the Contractor as part of this pay item.

3.6.7 ZCWD has considered all the possible obstructions in the detailed engineering that may encounter in the project implementation, however, if there are still unforeseen obstructions that came across during implementation concerning the electrical light post, drainage system, telecommunication underground wirings, pavement, water and sewer pipeline, etc., it shall be the contractor to coordinate with the concerned agencies in coordination with the Technical Services Group of ZCWD and additional works may be implemented to address the matter through variation order pursuant to the revised IRR of RA 9184.

3.7 CONCRETE AND/OR ASPHALT CUTTING AND REMOVAL OF EXISTING CONCRETE AND /OR ASPHALT PAVEMENT

This item of works shall include the manpower, equipment & tools and consumable materials in cutting on both side of the proposed trench, breaking and removal of concrete and/or asphalt pavement as per given dimension in the plan.

3.7.1 The item of work for **Asphalt Cutting** includes the cutting of asphalt pavement with thickness ranging from 100mm to 200mm.

3.7.2 The item of work for **Removal of Existing Asphalt Pavement** includes the breaking of asphalt pavement with thickness ranging from 100mm to 200mm by means of jackhammer.

3.7.3 The item of work for **Concrete Cutting** includes the cutting of concrete pavement with thickness ranging from 200mm to 280mm.

3.7.4 The item of work for **Removal of Existing Concrete Pavement** includes the breaking of concrete pavement with thickness ranging from 200mm to 280mm by means of jackhammer.

3.7.5 Cutting and breaking works shall be started only if all barricades, steel plates are available on site for safety of the public.

3.7.6 Cutting shall come first prior the demolition works to comply with the DPWH standard. All the terms and conditions on the excavation permit shall be observed by the contractor.

3.8 PIPELINE EXCAVATION

This shall include the removal of materials of whatever nature encountered including all obstructions of any nature that would interfere with the proper execution and completion of the pipe laying. The removal of the said materials shall conform to the lines and grades shown in the plan.

3.8.1 No excavation shall be allowed when the pipes, fittings and appurtenances intended for the segment is not yet delivered.

3.8.2 For longitudinal excavations, the maximum length for open continuous excavation per street shall not exceed **150 meters**. This shall be fully backfilled and made passable to traffic and continuously maintained in good condition before another strip of the same maximum length shall be excavated. For long projects extending to kilometers along a road, 150 meter excavated strips may be made at each end or at 300 meters distances. or the length necessary to accommodate the amount of pipe installed in a single day, whichever is greater.

3.8.3 Excess excavated materials shall be removed and disposed immediately at the ZCWD lot located at Lupong Road, Cabatangan. The hauling work is incorporated in this item of work, hence, without additional cost to ZCWD.

3.8.4 Trench shall be backfilled at the end of day's activity. There shall be no open excavation left before leaving the site otherwise open trenches shall be covered with steel plate.

3.8.5 The excavated areas shall be passable every end of the day.

3.9 PIPELINES, FITTINGS, BENDS AND APPURTENANCES

This shall include installation of the pipes and fittings into the lined and graded trench with the application of temporary backfilling through the utilization of the native materials up to the pavement level intended for hydrotesting activities. In addition, the cost of installation of thrust blocks, the **3-inch wide detectable underground warning tapes with markings "ATTENTION ZCWD WATER MAIN"** are included in this item as reflected in the detailed engineering plans.

PVC Pipe is specified to be a push-on joint. Valves and fittings are joined using adaptors/flanges and short pipes as reflected in the plans provided.

3.9.1 Pipes shall be laid on a dry trench. In cases where excavated trench is filled with water, the trench shall be dried up using equipment such as water pump before installing the pipe. Both ends of the pipes shall be covered with metal sheets or equivalent every after installation in the trench to avoid intrusion of the contaminants.

3.9.2 Water pumps and other equipment shall be included in the interconnection works and pipe fitting works item of work, hence, the same shall be subject to deductive variation order in case the actual site conditions will not require the use of such equipment.

3.10 VALVES/FITTINGS/INTER-CONNECTION WORKS

This item of work includes the manpower, equipment & necessary materials needed to do the interconnection works as reflected in the detailed engineering plan. The interconnection works shall include the **decommissioning works** (if necessary) of the existing old pipeline in situ which has been replaced. The decommissioning works involves the permanent shutdown of the existing old pipeline by means of isolating it from the existing system.

3.10.1 All cut–ins and connections shall be done with proper tools and equipment. Whenever tapping or cutting of pipe is required, it shall be done with a tapping or cutting machine designed for the specific purpose. Before proceeding to making the cut-in or connections, all tools, equipment and materials necessary shall be ready on hand and cut-ins or/and connections done with the least inconvenience with the consumers.

3.10.2 All materials needed for this item shall be evaluated, tested, hydro-tested and laid-out before this activity will be undertaken. This is to give time for replacement and arrangement of materials before deploying on site.

3.10.3 Only manpower with experience relative to this activity will be deployed on site. The names with their corresponding experiences that will perform this activity shall be submitted a week prior the scheduled date of interconnection for proper evaluation.

3.10.4 All materials/fittings retrieved on site shall be turned over and hauled to the ZCWD premises located at barangay Pasonanca & Lupong Road, Cabatangan without additional expense to ZCWD, hence, hauling works shall be included in this item.

3.10.5 Should there be a discrepancy between the existing pipe, fitting sizes as reflected in the plan against the actual size, the size for the interconnection shall be done in accordance with the actual size and be subject to variation order.

3.11 DRAINAGE CROSSING WITH CONCERETE ENCASEMENT

This shall include the cost of the installation of pipes encased with reinforced concrete crossing the path of existing drainages as per detailed drawings and specifications provided in plans. Concrete encasement shall be of Class A concrete mix as per DPWH specifications for Structural Concrete (Item 405) with at least Grade 33, deformed bars reinforcements.

3.12 BRIDGE CROSSINGS

This shall include the complete assembly of the pipelines crossing parallel to the existing bridges in accordance with the plans and specifications provided.

3.13 BLOW-OFFS AND AIR RELEASES

The cost shall include the provision of the complete assembly of blow-offs and air release valves along pipelines where locations are specified in the plans provided. The blow-off is being used in allowing the escape of fluid thus removing sediments from a pipe and it shall be constructed in locations specified in the plan where its pipe outlet shall fall into a natural drain such as creek, drainage system among others. The air release valve assemblies shall have the capacity to admit air during shut down of system and the release of air during operations and shall be constructed as per detailed engineering plan.

3.14 HYDRO-TESTING, DISINFECTION AND FLUSHING WORKS

The testing shall be conducted in accordance with the LWUA standard as enumerated. This item of works includes the manpower, equipment and materials (including water) to complete this item. This item of work shall include the filling of required volume of water to attain the full carrying capacity of the pipe, application of the required testing pressure, and disinfection in works by application of the required concentration of chlorine solution up to the flushing activity.

3.14.1 All pipelines shall be thoroughly flushed out with water prior to pressure and leakage tests. The pipeline shall be tested in sections after the trench is temporarily backfilled, but with joints exposed for examination except in heavily traveled roadways and prior to permanent resurfacing.

3.14.2 The pipeline shall not be filled with water until the following minimum curing periods have lapsed.

Concrete Thrust Blocks	
a. Standard Cement	7 days
b. High Early Strength Cement	36 hours

3.14.3 The pipeline shall be prepared for testing by closing valves when available, or placing temporary bulkheads or end cap in the pipe and filling the line slowly with water. During the filling of pipe and before the application of the specified test pressure, all air shall be expelled from the pipeline. To accomplish this, taps shall be made if necessary, at points of highest elevation and after

completion of the test the taps shall be tightly plugged unless otherwise specified. After the line or section thereof has been completely filled, it shall be allowed to stand under a slight pressure for a minimum of forty-eight (48 hours) to allow the escape of air from any air pockets and to allow the pipe to absorb as much water as possible.

3.14.4 During the testing period, all exposed pipes, fittings, valves, hydrants, joints and couplings shall be examined for leaks. If found to be cracked or defective, it shall be removed and replaced with sound material at their own expense. The pipeline shall then be refilled and all bulkheads, joints and connections shall be examined for leaks. If any are found, this shall be stopped.

3.14.5 The test shall consist of holding the test pressure on each section of the line for a period of two (2) hours. The test pressure at lowest point shall be 150psi the water necessary to maintain the pressure shall be measured through a water meter. The leakage shall be considered the amount of water entering the pipeline during the two-hour period test.

3.14.6 The allowable leakage for uPVC Pipes and ductile iron pipe shall not exceed 1.85 Liter/millimeter of the diameter of pipe per kilometer per day. Should any test of a section of pipeline disclose joint leakage greater than that permitted, the defective pipe, fitting, joint, coupling or other appurtenance shall be located and repaired. The test shall then be repeated until the leakage is within the permitted allowance.

3.14.7 All new water mains or extensions to existing systems or valve section of such extension or any replacement in the existing water system shall be disinfected with chlorine in accordance with AWWA Standard C601 "Standard for Disinfecting Water Mains".

3.14.8 The amount and concentration of chlorine solution applied shall be such as to provide a dosage of not less than fifty (50) mg per litter and shall be introduced into lines as directed by the ZCWD Site Engineer. After a contact period of twenty-four (24) hours, the chlorine residual at the end of pipelines shall not be less than twenty-five (25) mg per liter. The system shall then be **FLUSHED** with clean (potable) potable water until the residual chlorine is not greater than 0.75 mg per liter but not less than

3.14.9 0.20 mg per liter. All valves and appurtenances in the pipelines being disinfected shall be operated several times during the chlorine periods.

3.14.10 The preferred point of application of the chlorine agent is at the beginning of the pipeline, extension or any valved section and through a corporation stop inserted on the top of the laid pipe.

3.14.11 Should the initial treatment/ disinfection fail to result in the conditions stipulated above, the chlorination procedure shall be repeated until satisfactory results are obtained.

3.15 INSTALLATION OF FIRE HYDRANTS WITH CONCRETE BARRICADE

This covers the items reflected in the plan including the tapping (Tee Connections) from the existing distribution/feederline, installation of pipeline going to the fire hydrant head/valve as well as the painting works of concrete barricades. Also, excavation and interconnection to the water main (Tee Fittings to Fire Hydrant) and construction of fire hydrant assemblies are included in this item of work.

3.16 TRANSFER OF INDIVIDUAL SERVICE LINE CONNECTIONS

This item of work covers all costs to complete the provision and assembly of individual meters with concrete stands as reflected in the plans provided. Likewise, this applies to the transfer of existing individual meters to the newly replaced distribution lines. Decommissioning and closure of old tapping lines are also covered in this item of work.

3.16.1 The ZCWD Engineer under the supervision of MERD, shall coordinate with the Commercial Services Department (CSD) for the quantity, location and account details of the water meters to be transferred. Prior the transfer site of tapping, a survey to be conducted by the contractor & ZCWD Engineer for accounting of the actual number of existing service lines covered by the project. Suspected illegal service connections found shall be reported to the Legal Department for further verification and investigation.

3.16.2 All materials/fittings retrieved on site shall be turned over to the ZCWD Property Section and it shall be hauled to the ZCWD premises located at barangay Pasonanca & Lupong Road, Cabatangan without additional expense to ZCWD, hence, hauling works shall be included in this item.

3.16.3 For this project, particularly at Lobregat Village, Upper Calarian, all the existing water meters shall be transferred to the new feederline. The contractor shall supply all the fittings needed as shown in the plan (except the water meter). Brass tails piece shall be supplied by the contractor after the survey conducted to determine the actual size, length & quantity of the water meter affected and also to determine the needed brass tail piece length to maintain the water meter assembly width of 316mm.

3.17 ITEM 200- AGGREGATE SUB-BASE AND ITEM 201 - BASE COURSE

As part of the major item of restoration works, this item of work includes the provision of sub-base (Item 200) and base course (Item 201) preparation with 15% shrinkage factor and proper tamping and settling. This also covers the removal of temporarily backfilled trench area leaving the Item 104 on fill for official utilization.

3.17.1 Prior to backfilling, materials test and field density results shall pass the standard as stipulated in the DPWH Standards.

3.17.2 **Detectable Underground Warning Tape** shall be provided as indicated in the plan for pipeline/utility identification, it shall be fully detectable from above grade utility locators and be able to provide a depth reference point to top of pipe. It shall be 3" wide, installed between Item 200 and Item 201 at 0.31 MBGL. The material of the tape shall be aluminum backing to make it easy to find underground. Detectable Underground Warning Tape shall be

continuous from valve box to valve box for complete pipeline detection and location.

3.17.3 The warning words shall be legible, correctly spelled and fully printed which reads "**ATTENTION ZCWD WATER MAIN**" in black lettering on a yellow background.

3.18 ITEM 311 - PCC PAVEMENT

This item of work includes the provision of concrete pavement restoration affected by the pipe laying including the provision of dowels on national roads. The use of fast setting concrete is hereby required to achieve the desired concrete strength in less than (7) seven days or less.

3.18.1 Restoration works shall be executed only after passing the required Field Density Test and other test requirement. Submission of approved "*Order*" to proceed restoration works from the concerned agency is also required.

3.18.2 Trenches must be free from debris and caved-in walls before backfilling and restoration works.

3.18.3 All restoration activities must be witnessed DPWH technical representatives.

3.18.4 After the segment shall have passed hydrotesting works, restoration thereof should immediately be done.

3.19 INSTALLATION OF DOWEL BAR FOR ITEM 311 RESTORATION

All concrete pavement (Item 311) restoration works along identified National Road (under DPWH jurisdiction) shall be installed with 16mm deformed steel bar dowel as indicated in the detailed engineering plan. The dowel shall be installed by drilling onto the existing pavement and inserting with concrete epoxy and allow to harden sufficiently before concrete restoration commence. Installation detail is shown in the detailed estimate. Manpower, equipment & tools, materials shall be included in this item of works.

3.20 ITEM 302 - BITUMINUOS TACK COAT AND ITEM 310 - BITUMINOUS CONCRETE SURFACE COURSE

This item of work includes manpower, equipment and materials needed to complete this item. This shall cover the preparation of the asphalt base and asphalt pavement in accordance with the required DPWH standards on asphalt pavements. The materials specifications shall be in accordance with the DPWH blue book latest edition.

3.21 REFLECTORIZED THERMOPLASTIC PAVEMENT MARKINGS

This item of work includes manpower, equipment and materials needed to complete this item. Also, in this item includes the restoration of all reflectorized thermoplastic markings affected by the project and the restoration works shall be in accordance with the material specifications, application methodology and quality control of DPWH standards.

IV. MATERIALS SPECIFICATION

All materials specified herein shall be supported with manufacturer's materials testing certificate for quality control purposes and this shall be approved by the ZCWD prior any utilization in any items of work. All materials for asphalt & concrete pavement restoration including Items 200 & 201 shall be tested pursuant to DPWH standards prior restoration works.

ZCWD shall provide a widely known and accepted Specification commonly used in the water industry should some of the materials' specifications has not been specified in this section. Also, during the project implementation, should there be an inconsistency between the specifications herein and in the provided detailed engineering plan, the ZCWD shall determine which specification shall be adopted and implemented.

4.1 ORIENTED POLYVINYL CHLORIDE (PVC-O)

Use PVC-O Pipe materials in Bunguiao area Pipeline with the following specifications:
PVC-O pipes shall conform to ISO 16422 PN 16 Standard. The PVC-O pipes shall beBell & Spigot with Rubber Ring or fixed seal or its equivalent and shall contain the following customized markings:

- Manufacturing year
- Serial no.
- Nominal diameter
- Standard
- Pressure Rating

The nominal pressure rating of PVC-O pipes shall be PN 16 (16bars or 232psi).
Please note that the diameter indicated in the detailed engineering plan is in nominal Inside Diameter (I.D.).

Also, should the bidder/contractor needs to add PVC materials on top of the list of the purchased materials for turn over to the Contractor, upon implementation, the additional PVC materials shall be PVC-O Pipes with the above standard.

4.2 EDIBLE LUBRICANTS

Lubricants to be used in pipe fitting are specified to be of food-grade base only. It shall conform to the water potability standards of *Philippine National Standards of Drinking Water (PNSWD) 2017* for safety purposes and to further avoid damaging the rubber seal for that matter.

4.3 ALUMINUM DETECTABLE WARNING TAPE

Total Width - 3 inches
Thickness - ≤ 5 Mil
Material - Aluminum *(Made Detectable for its maximum life span)*
Customized Label - **ATTENTION ZCWD WATER MAIN** (*Black print)*

4.4 VALVES AND FITTINGS

4.4.1 Commercial Fire Hydrant –this fire hydrant shall have 63mmØ diameter hose connector and 1-100mm hose pumper outlet and a dry type transfer of tapping. All other accessories to the complete assembly of the fire hydrant are indicated and specified in the provided detailed plan.

4.4.2 75mmØ Fire Hydrant – the fire hydrant shall be made up of 75mmØ brass head and Galvanized Iron vertical pipe and 63mm Ø hose connector. All other accessories to the complete assembly of the fire hydrant are indicated and specified in the provided detailed plan.

4.4.3 Gate Valves – Gate valve body shall be made up of Ductile Iron Body in accordance with a pressure rating of 16 Bar. This section applies to gate 50 mm (2in.) through 300 mm (12in.) in sizes. The valve shall be non-rising stem with a minimum of two ″0″ ring seal as (at least one above the stem collar), or rising stem when shown on the drawings. The valves shall have a 50 mm (2in.) square operating nut with a cast arrow showing direction in which the nut is to be turned to open the valve. Valves shall be constructed to permit the replacement of the "O" rings above the stem collar under full working water pressure with the valves in the full open position. The valves shall be painted in blue.

4.4.5 Blow Off Valves – the assembly shall be of Ductile Iron body gate valve with 16bar pressure rating. Sizes, complete assembly detail and locations are reflected in the provided plans

4.4.6 Air Release Valves –shall be a combination air release valve body and made up of iron and a pressure rating of 16 Bar. Sizes, complete assembly detail and locations are reflected in the provided plans. Air release valves sizes from 50mm and above in diameter shall have flange connections while 25mm may have threaded connections, except where otherwise shown on the drawings, and shallow be designed for a water working pressure of 1.0 MPa (150 psi). The valve shall be designed to automatically permit the escape of accumulated air under pressure while the pipe is in operation and capable to admit air during draining of pipes.

4.4.7 Flexible Coupling –Sleeve type coupling body shall be made up of cast iron body and a pressure rating of 16 Bar. These couplings must be capable of jointing both DI, uPVC pipes and existing pipeline as per interconnection details. The minimum center sleeve length of flexible coupling shall not be less than seven (7″) inches for sizes 50mm to 300mm and not less than (12″) for sizes 350mm and above.

Other Fittings – Adaptors, flanges, tees, cross tees, and other bends indicated in the plans are specified to have a cast iron body in accordance with the ASTM-A53 global standards and a pressure rating of 16 bars.

4.4.1 INDIVIDUAL SERVICE CONNECTIONS

Brass fittings – brass fittings such as ball valves, corporation cocks, double adaptor and safety key valve shall be made up of lead-free yellow brass metal that is a requirement for potable use with at least 55% copper content supported with test result of copper content of the meter body from any DOST-accredited laboratory during project implementation.

Reinforced concrete stand – shall be made up of reinforced concrete in accordance with the plans and specifications provided.

Saddle clamps – shall be made up of cast iron and can be installed and withstand at least 150psi pressure.

GI Pipes, Bends and fittings – All GI pipes, bends and fittings shall be of Hot Dipped galvanized, PNS 26 Heavy Gauge Standard or ASTM A-53 Schedule 40.

19mmØ (Inside Diameter) PE Tubing – are specified to be ISO standard, SDR 11.

All other materials necessary to complete the individual service line connection shall be based on the provided plans.

4.5 ITEM 200 - AGGREGATE SUB-BASE COURSE

This serves as the first phase of restoration works. It shall be with strict compliance with all the provisions, material testing, preparation and methodology as per DPWH Standard Specifications for Highways Bridges and Airport, 2013 Ed. Under item 201

The Contractor shall provide new materials for sub-base course and not from the native materials acquired during excavation.

4.6 ITEM 201 - AGGREGATE BASE COURSE

This serves as the second phase of restoration works. It shall be with strict compliance with all the provisions, material testing, preparation and methodology as per DPWH Standard Specifications for Highways Bridges and Airport, 2013 Ed. Under item 200

The Contractor shall provide new materials for base course and not from the native materials acquired during excavation.

4.7 CONCRETE PAVEMENT

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.

In preparation for the concrete pouring along National Roads, provision of 16mmØ deformed bar dowel shall be drilled in place 750mm apart unto existing concrete using Concrete Adhesive at 400mm extrusion and 800mm total length. It is required to use a powered Concrete Dowel Drill that will be turned over to ZCWD office upon completion of the project. Class Mix, provisions, material testing, material quality and methodology are all based on DPWH Standard Specifications for Highways Bridges and Airport, (latest edition) under Item 311.

4.8 BITUMINOUS EMULSIFIED ASPHALT (TACK COAT)

This Item shall consist of preparing and treating an existing bituminous or cement concrete surface with bituminous material in accordance with the Plans and Specifications, preparatory to the construction of a bituminous surface course

This commences the asphalt laying stage of pavement restoration works. It shall conform to the standards as per DPWH Standard Specifications for Highways Bridges and Airport, (latest edition) under Item 302 (a).

4.9 REFLECTORIZED THERMOPLASTIC MARKINGS

All reflectorized thermoplastic markings affected by the pipelaying (white or yellow marks) must be in accordance with the material specifications, application methodology and quality control of DPWH standards.

V. SCHEDULING

5.1 The schedule for implementation is planned based on the traffic flow program generated by the city government of Zamboanga. Any proposed traffic alteration scheme borne by the contractor must be presented to ZCWD for further approval by the city government's traffic management unit for smooth implementation.

5.2 On roads which are affected by pipeline replacement on both sides of facility, pipe laying activity must take place one after the other to avoid traffic congestion (if applicable).

5.3 All road/ project sites located within 4–km radius from the city proper shall adopt a night shift schedule of work *(8:00PM – 4:00AM).* The rest of the areas can be implemented pursuant to Zamboanga City Ordinance 309 such as project implementation within 4-km to 7-km radius from 6:00pm to 6:00am.

5.4 As per mandate of the city government's traffic management unit, all pipelaying works located in the city proper are scheduled one road location after the other.

VI. BILL OF QUANTITIES

6.1 LIST OF CONSTRUCTION MATERIALS PURCHASED ALREADY BY THE ZCWD:

Below is a list of construction materials that were already purchased by the ZCWD which shall be turned over to the winning bidder/Contractor and these are not included in the project's ABC to be bid out.

During the preparation of the financial bid/estimate, the bidders shall refer to this list of construction materials and shall include the materials in their respective estimates with zero cost (indicating that it will be coming from this list). The bidder shall conduct due diligence in the preparation of the financial bid/estimate, once the unit cost of a material is zero in the estimate and found out that it is not in the list of materials for turnover, it shall be considered being offered to ZCWD as free. On the other hand, if the bidder put a unit cost of a material in the estimate but found out that it is available in the list provided, hence, the said material shall be deducted and the material will be provided by the ZCWD.

Upon project implementation, the winning bidder/Contractor shall formally request from the ZCWD through writing that they will be withdrawing the said construction materials (it may be in full or partial) and the TSG/ECD/MERD shall process the release. The contractor shall provide hauling vehicle for the withdrawal of these materials from ZCWD property (Lupong Road Cabatangan and/or Motorpool Pasonanca). Once the materials are with the contractor, the contractor shall be principally responsible for the safekeeping of these materials and shall be solely responsible for any loss, damage, or injury to them for whatever causes.

Further, the materials' warranty on the list is not under the contractor. Should some of the materials fail or got damage during the hydrotesting or commissioning stage, the contractor shall not be responsible to replace the damaged materials, but it shall be the ZCWD to provide another material for replacement or if not available, the contractor shall provide the materials at the cost of the ZCWD, however, the manpower & equipment to be utilized in the replacement or in the restoration shall be subject to additive variation order. If the materials under the list found to be defective or incompatible to use in the project, the said materials shall be turned over again to the ZCWD (to be hauled by the Contractor to Motorpool, Pasonanca) and the Contractor shall supply the replacement which are to be included in the additive variation orders.

ITEM	UNIT	QTY
PAINT MATERIALS		
Concrete Neutralizer	qrt.	10.00
Flat Latex Paint (Primer)	gal.	10.00
Gloss Latex Paint (Caterpillar Yellow)	gal.	10.00
Gloss Latex Paint (Black)	gal.	11.00
Red Oxide Metal Primer	gal.	10.00
Quick Dry Enamel (Red)	gal.	5.00
Quick Dry Enamel (Blue)	gal.	5.00
Paint Thinner	gal.	8.00
25mm Masking Tape	rolls	42.00
2" Paint Brush	pc.	21.00

4" Paint Brush	pc.	21.00
Concrete Epoxy	gal.	1.00
PVC MATERIALS		
75mmØ x 6.00m PVC Pipe, CLASS 150, B/S with R.R.	length	101.00
75mmØ x 45° PVC Bend, Class 150, B/S with R.R.	pcs	7.00
75mmØ x 11.25° PVC Bend, Class 150, B/S with R.R.	pcs	2.00
LUMBERS		
2" x 2" x 10' Coco Lumber	bd.ft.	563
2" x 4" x 8' Coco lumber	bd.ft.	32
2" x 4" x 12' Coco lumber	bd.ft.	64
2" x 3" x 8' Coco lumber	bd.ft.	24
2" x 3" x 10' Coco lumber	bd.ft.	30
2" x 4" x 10' Coco lumber	bd.ft.	80
2" x 2" x 12' Coco Lumber	bd.ft.	32
2" x 2" x 8' Coco Lumber	bd.ft.	8
BRASS MATERIALS		
19mmØ Brass Corporation Cock, (ISO) Clamp Type	pcs	52.00
75mmØ Brass Angle Fire Hydrant (Threaded Type) w/ 63mmØ Hose Connector	sets	5.00
25mmØ Brass Ball Valve	pcs	11.00
19mm.Ø Brass Male Threaded Straight Coupling, Clamp Type	pcs	40.00
12mmØ x 63mm Brass Tail Piece	pcs.	80.00
HARDWARE MATERIALS		
Hacksaw Blade	pcs	46.00
25mm Teflon Tape	rolls	36.00
6mm thk Rubber Gasket	kgs	23.00
16mmØ x 88mm Stainless Steel Hex. Head Bolt w/ Nut & Washer	pcs	300.00
10mmØ x 6.00m Deformed Reinforcing Steel Bar	pcs	56.00
#16 G.I. Tie-wire	kgs	27.00
12mm thk x 1.20m x 2.40m Ordinary Plywood	shts	54.00
GA # 26 x 10' Corrugated G.I. Sheet	pcs	20.00
1" C.W. Nail	kgs	1.00
1½" C.W. Nail	kgs	12.50
2" C.W. Nail	kgs	10.50
2½" C.W. Nail	kgs	6.00
3" C.W. Nail	kgs	19.50
4" C.W. Nail	kgs	9.00
2½" Finishing Nail	kgs	6.00

6011 Welding Rod	kgs	14.00
1/4"Ø Stainless Steel Oil Filled Pressure Gauge (0-300 psi)	kgs	11.00
6mm thk. x 38mm x 38mm x 6.0m MS Angle Bar	pcs	11.00
#4 x 50mm x 50mm x 1.20m x 2.40m Steel Matting	shts.	7.00
Padlock (BIG)	pcs	22.00
19mmø x 6.0m MS Plain Round Bar	pcs	5.00
Curing Compound	ltrs	50.00
Water Meter Sealing Wire	sets	40.00
C.I. MATERIALS		
100mmØ C.I. Mechanical End Cap	pcs	9.00
75mmØ C.I. Mechanical End Cap	pc	3.00
50mmØ C.I. Mechanical End Cap	pcs	2.00
100mmØ x 19mmØ C.I. Saddle Clamp w/ Stainless Bolt, Nut & Washer & Rubber	sets	6.00
100mmØ x 25mmØ C.I. Saddle Clamp w/ Stainless Bolt, Nut & Washer & Rubber	sets	8.00
75mmØ x 19mmØ C.I. Saddle Clamp w/ Stainless Bolt, Nut & Washer & Rubber	sets	44.00
75mmØ x 25mmØ C.I. Saddle Clamp w/ Stainless Bolt, Nut & Washer & Rubber	set	2.00
50mmØ x 19mmØ C.I. Saddle Clamp w/ Stainless Bolt, Nut & Washer & Rubber	sets	2.00
50mmØ x 25mmØ C.I. Saddle Clamp w/ Stainless Bolt, Nut & Washer & Rubber	set	1.00
200mmØ x 75mmØ C.I. Tee, M/F	pc.	1.00
150mmØ x 100mmØ C.I. Tee, M/F	pc	1.00
100mmØ x 100mmØ C.I. Tee, M/F	pcs	16.00
100mmØ x 75mmØ C.I. Tee, M/F, Flanged End in Accordance w/ ANSI B16.1 Class 125 w/ 1 unit-75mmØ Steel Ring Flange Conforming to ANSI B16.5 Class 150-Standard, w/ 4-Units of 16mmØ x 88mm Stainless, (Full Thread) Hex. Head Bolt (type 304) w/ Nut and Washer	sets	4.00
75mmØ x 75mmØ C.I. Tee, M/F, Flanged End in Accordance w/ ANSI B16.1 Class 125 w/ 1 unit-75mmØ Steel Ring Flange Conforming to ANSI B16.5 Class 150-Standard, w/ 4-Units of 16mmØ x 88mm Stainless, (Full Thread) Hex. Head Bolt (type 304) w/ Nut and Washer	set	1.00
75mmØ x 75mmØ C.I. Tee, F/F	pc	1.00
50mmØ x 50mmØ C.I. Tee, M/M	pc	1.00
100mmØ C.I. Body Gate Valve, PN 16, F/F	pcs	17.00
100mmØ C.I. Body Gate Valve, PN 16, M/M	pc	1.00
75mmØ C.I. Body Gate Valve, F/F, Flange End in Accordance w/ ANSI B16.1 Class 125 w/ 2 units-75mmØ Steel Ring Flange Conforming to ANSI B16.5 Class 150-Standard, w/ 8-Units of 16mmØ x 88mm Stainless, (Full Thread) Hex. Head Bolt (type 304) w/ Nut and Washer	pcs	5.00

75mmØ C.I. Body Gate Valve, PN 16, F/F	pcs	3.00
50mmØ C.I. Body Gate Valve, PN 16, M/M	pc	1.00
100mmØ C.I. Adaptor, F/P	pcs	17.00
75mmØ C.I. Adaptor, F/P	pcs	3.00
75mmØ C.I. Adaptor, M/F	pc	1.00
100mmØ C.I. Sleeve Type Flexible Coupling, (C.I.-PVC)	pcs	17.00
75mmØ C.I. Sleeve Type Flexible Coupling, (C.I.-PVC)	pcs	3.00
200mmØ C.I. Sleeve Type Flexible Coupling, (PVC)	pc.	1.00
150mmØ C.I. Sleeve Type Flexible Coupling, (PVC)	pc	1.00
100mmØ C.I. Sleeve Type Flexible Coupling, (PVC)	pcs	20.00
75mmØ C.I. Sleeve Type Flexible Coupling, (PVC)	pcs	2.00
50mmØ C.I. Sleeve Type Flexible Coupling, (P.E.)	pcs	3.00
150mmØ C.I. Valve Box Cover w/o telescopic	pcs	26.00

6.2 BILL OF QUANTITIES

Below is the Bill of Quantities (BOQ) for this project arranged according to route or road segment. The unit cost in the BOQ shall be consistent with the unit cost of the detailed estimate submitted by the bidder, in case of discrepancies between unit cost in the detailed estimate and unit cost in the bill of quantities, the latter shall prevail as per section 32.2.3 of the IRR of RA 9184.

PROJECT TITLE : **PROPOSED FEEDERLINES IN VARIOUS LOCATIONS IN THE CITY FOR WATER SERVICE EXPANSION**

LOCATION: ZAMBOANGA CITY

BILL OF QUANTITIES (BOQ)

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST (WITH OCM, PROFIT & VAT)	TOTAL
SPL - 1	MOBILIZATION/DEMOBILIZATION (up to 1% only of Estimated Direct Cost)	1.00	LOT		
SPL - 2	TEMPORARY FACILITIES	2.00	EACH		
SPL - 3	CONSTRUCTION SAFETY & HEALTH PROGRAM	1.00	LOT		
SPL - 4	CONSTRUCTION PROJECT BILLBOARDS/ SIGNAGES	1.00	LOT		
1. PROPOSED 75mmØ PVC FEEDERLINE AT UCHAI, SINUNUC					
SPL - 5a	AS-STAKED SURVEY/ PREPARATION OF AS-STAKED PLAN/ CONSTRUCTION DRAWING/ LAYOUTING/ LINE AND GRADE	395.63	LN.M.		
SPL - 5b	ASPHALT CUTTING	13.74	LN.M.		
SPL - 5c	CONCRETE CUTTING	108.43	LN.M.		
101(4)b	REMOVAL OF EXISTING ASPHALT PAVEMENT	6.87	SQ.M.		
101(4)a	REMOVAL OF EXISTING CONCRETE PAVEMENT	43.80	SQ.M.		
103(1)a	STRUCTURE EXCAVATION (COMMON SOIL)	154.30	CU.M.		
SPL - 5d	PIPELINES & APPURTENANCES (75mmØ PVC PIPELINE, CLASS 150, B/S with R.R.) W/ PARTIAL BACKFILLING	395.63	LN.M.		
SPL - 5e	FITTING OF BENDS (75mmØ x 45° PVC Bend) W/ CONCRETE THRUST BLOCK & W/ PARTIAL BACKFILLING	2.00	PCS.		
SPL - 5f	CULVERT CROSSING WITH CONCRETE ENCASEMENT	1.80	LN.M.		
SPL - 5g	HYDRO-TESTING & DISINFECTION WORKS (75mmØ PVC PIPELINE, CLASS 150, B/S with R.R.)	395.63	LN.M.		
SPL - 5h	PIPELINE FLUSHING (75mmØ PVC PIPELINE, CLASS 150, B/S with R.R.)	395.63	LN.M.		
SPL - 5i	VALVES/FITTINGS/INTER-CONNECTION WORKS	1.00	ASSY.		
SPL - 5j	INSTALLATION OF 25mm Ø AIR RELEASE ASSEMBLY WITH CONCRETE BARRICADE (Tapped on 75mmØ PVC Pipeline)	1.00	ASSY.		
SPL - 5k	BACKFILLING & COMPACTION WORKS OF NATIVE MATERIALS	150.15	CU.M.		
201	AGGREGATE BASE COURSE	0.83	CU.M.		

200	AGGREGATE SUBBASE COURSE	0.80	CU.M.		
SPL - 5l	INSTALLATION OF DOWEL BAR FOR ITEM 311 RESTORATION	12.32	KGS.		
311(1)a	PCC PAVEMENT(PLAIN) - CONVENTIONAL METHOD, 200MM THICK	36.93	SQ.M.		
311(1)a	PCC PAVEMENT(PLAIN) - CONVENTIONAL METHOD, 230MM THICK	6.87	SQ.M.		
302a	BITUMINOUS TACK COAT (Emulsified Asphalt)	0.0048	M.T.		
310b	BITUMINOUS CONCRETE SURFACE COURSE (150 mm. Thk.)	6.87	SQ.M.		
2. PROPOSED 100mmØ PVC FEEDERLINE AT OUR LADY OF ASSUMPTION, TALISAYAN OLD HIGHWAY					
SPL - 6a	AS-STAKED SURVEY/ PREPARATION OF AS-STAKED PLAN/ CONSTRUCTION DRAWING/ LAYOUTING/ LINE AND GRADE	449.33	LN.M.		
103(1)a	STRUCTURE EXCAVATION (COMMON SOIL)	187.91	CU.M.		
SPL - 6b	PIPELINES & APPURTENANCES (100mmØ PVC PIPELINE, CLASS 150, B/S with R.R.) W/ PARTIAL BACKFILLING	449.33	LN.M.		
SPL - 6c	FITTING OF BENDS (100mmØ x 11.25° PVC Bend) W/ CONCRETE THRUST BLOCK & W/ PARTIAL BACKFILLING	4.00	BENDS		
SPL - 6d	FITTING OF BENDS (100mmØ x 22.5° PVC Bend) W/ CONCRETE THRUST BLOCK & W/ PARTIAL BACKFILLING	2.00	BENDS		
SPL - 6e	FITTING OF BENDS (100mmØ x 45° PVC Bend) W/ CONCRETE THRUST BLOCK & W/ PARTIAL BACKFILLING	1.00	BEND		
SPL - 6f	HYDRO-TESTING & DISINFECTION WORKS (100mmØ PVC PIPELINE, CLASS 150, B/S with R.R.)	449.33	LN.M.		
SPL - 6g	PIPELINE FLUSHING (100mmØ PVC PIPELINE, CLASS 150, B/S with R.R.)	449.33	LN.M.		
SPL - 6h	VALVES/FITTINGS/INTER-CONNECTION WORKS	4.00	ASSY.		
SPL - 6i	INSTALLATION OF ONE (1) - UNIT - 75mm Ø FIRE HYDRANT WITH CONCRETE BARRICADE (Tapped on 100mmØ PVC Pipeline)	1.00	ASSY.		
SPL - 6j	INSTALLATION OF 25mm Ø AIR RELEASE ASSEMBLY WITH CONCRETE BARRICADE (Tapped on 100mmØ PVC Pipeline)	1.00	ASSY.		
SPL - 6k	BACKFILLING & COMPACTION WORKS OF NATIVE MATERIALS	183.64	CU.M.		
3. PROPOSED 50 mmØ PE TUBING FEEDERLINE AT AYALA GYM, AYALA ZAMBOANGA CITY					
SPL - 7a	AS-STAKED SURVEY/ PREPARATION OF AS-STAKED PLAN/ CONSTRUCTION DRAWING/ LAYOUTING/ LINE AND GRADE	115.90	LN.M.		
SPL - 7b	CONCRETE CUTTING	115.90	LN.M.		
101(4)a	REMOVAL OF EXISTING CONCRETE PAVEMENT	42.07	SQ.M.		
103(1)a	STRUCTURE EXCAVATION (COMMON SOIL)	40.94	CU.M.		
SPL - 7c	PIPELINES & APPURTENANCES (50mmØ P.E. Tubing, SDR 11) W/ PARTIAL BACKFILLING	115.90	LN.M.		
SPL - 7d	HYDRO-TESTING & DISINFECTION WORKS (50mmØ P.E. Tubing, SDR 11)	115.90	LN.M.		
SPL - 7e	PIPELINE FLUSHING (50mmØ P.E. Tubing, SDR 11)	115.90	LN.M.		

SPL - 7f	VALVES/FITTINGS/INTER-CONNECTION WORKS	1.00	ASSY.		
SPL - 7g	INSTALLATION OF 25mm Ø AIR RELEASE ASSEMBLY WITH CONCRETE BARRICADE (Tapped on 50mmØ P.E. Tubing, SDR 11)	1.00	ASSY.		
SPL - 7h	BACKFILLING & COMPACTION WORKS OF NATIVE MATERIALS	40.57	CU.M.		
311(1)a	PCC PAVEMENT(PLAIN) - CONVENTIONAL METHOD, 200MM THICK	42.07	SQ.M.		
4. PROPOSED 100mmØ PVC FEEDERLINE AT PUROK 6DA, TALISAYAN					
SPL - 8a	AS-STAKED SURVEY/ PREPARATION OF AS-STAKED PLAN/ CONSTRUCTION DRAWING/ LAYOUTING/ LINE AND GRADE	1,412.00	LN.M.		
103(1)a	STRUCTURE EXCAVATION (COMMON SOIL)	590.50	CU.M.		
SPL - 8b	PIPELINES & APPURTENANCES (100mmØ PVC PIPELINE, CLASS 150, B/S with R.R.) W/ PARTIAL BACKFILLING	1,412.00	LN.M.		
SPL - 8c	FITTING OF BENDS (100mmØ x 11.25° PVC Bend) W/ CONCRETE THRUST BLOCK & W/ PARTIAL BACKFILLING	4.00	BENDS		
SPL - 8d	FITTING OF BENDS (100mmØ x 22.5° PVC Bend) W/ CONCRETE THRUST BLOCK & W/ PARTIAL BACKFILLING	1.00	BEND		
SPL - 8e	HYDRO-TESTING & DISINFECTION WORKS (100mmØ PVC PIPELINE, CLASS 150, B/S with R.R.)	1,412.00	LN.M.		
SPL - 8f	PIPELINE FLUSHING (100mmØ PVC PIPELINE, CLASS 150, B/S with R.R.)	1,412.00	LN.M.		
SPL - 8g	VALVES/FITTINGS/INTER-CONNECTION WORKS	1.00	ASSY.		
SPL - 8h	INSTALLATION OF TWO (2) - UNITS - 75mm Ø FIRE HYDRANT WITH CONCRETE BARRICADE (Tapped on 100mmØ PVC Pipeline)	2.00	ASSY.		
SPL - 8i	INSTALLATION OF 25mm Ø AIR RELEASE ASSEMBLY WITH CONCRETE BARRICADE (Tapped on 100mmØ PVC Pipeline)	3.00	ASSY.		
SPL - 8j	BACKFILLING & COMPACTION WORKS OF NATIVE MATERIALS	577.09	CU.M.		
5. PROPOSED 75mmØ PVC FEEDERLINE AT LOBREGAT VILLAGE, UPPER CALARIAN					
SPL - 9a	AS-STAKED SURVEY/ PREPARATION OF AS-STAKED PLAN/ CONSTRUCTION DRAWING/ LAYOUTING/ LINE AND GRADE	204.13	LN.M.		
SPL - 9b	CONCRETE CUTTING	408.26	LN.M.		
101(4)a	REMOVAL OF EXISTING CONCRETE PAVEMENT	79.61	SQ.M.		
103(1)a	STRUCTURE EXCAVATION (COMMON SOIL)	79.61	CU.M.		
SPL - 9c	PIPELINES & APPURTENANCES (75mmØ PVC PIPELINE, CLASS 150, B/S with R.R.) W/ PARTIAL BACKFILLING	204.13	LN.M.		
SPL - 9d	FITTING OF BENDS (75mmØ x 45° PVC Bend) W/ CONCRETE THRUST BLOCK & W/ PARTIAL BACKFILLING	4.00	PCS.		
SPL - 9e	FITTING OF BENDS (75mmØ x 11.25° PVC Bend) W/ CONCRETE THRUST BLOCK & W/ PARTIAL BACKFILLING	1.00	PC.		
SPL - 9f	HYDRO-TESTING & DISINFECTION WORKS (75mmØ PVC PIPELINE, CLASS 150, B/S with R.R.)	204.13	LN.M.		
SPL - 9g	PIPELINE FLUSHING (75mmØ PVC PIPELINE, CLASS 150, B/S with R.R.)	204.13	LN.M.		

SPL - 9h	VALVES/FITTINGS/INTER-CONNECTION WORKS	2.00	ASSY.		
SPL - 9i	INSTALLATION OF ONE (1) - UNIT - 75mm Ø FIRE HYDRANT WITH CONCRETE BARRICADE (Tapped on 75mmØ PVC Pipeline)	1.00	ASSY.		
SPL - 9j	INSTALLATION OF 25mm Ø AIR RELEASE ASSEMBLY WITH CONCRETE BARRICADE (Tapped on 75mmØ PVC Pipeline)	1.00	ASSY.		
SPL - 9k	TRANSFER OF INDIVIDUAL SERVICELINE CONNECTION (Tapped on 75mmØ PVC Pipeline)	40.00	UNITS		
SPL - 9l	BACKFILLING & COMPACTION WORKS OF NATIVE MATERIALS	78.31	CU.M.		
311(1)a	PCC PAVEMENT(PLAIN) - CONVENTIONAL METHOD, 200MM THICK	79.61	SQ.M.		
6. PROPOSED 100mmØ PVC FEEDRLINE AT OUR LADY OF ASSUMPTION, AYALA					
SPL - 10a	AS-STAKED SURVEY/ PREPARATION OF AS-STAKED PLAN/ CONSTRUCTION DRAWING/ LAYOUTING/ LINE AND GRADE	1,106.57	LN.M.		
103(1)a	STRUCTURE EXCAVATION (COMMON SOIL)	462.77	CU.M.		
SPL - 10b	PIPELINES & APPURTENANCES (100mmØ PVC PIPELINE, CLASS 150, B/S with R.R.) W/ PARTIAL BACKFILLING	1,106.57	LN.M.		
SPL - 10c	FITTING OF BENDS (100mmØ x 11.25° PVC Bend) W/ CONCRETE THRUST BLOCK & W/ PARTIAL BACKFILLING	1.00	BEND		
SPL - 10d	FITTING OF BENDS (100mmØ x 22.5° PVC Bend) W/ CONCRETE THRUST BLOCK & W/ PARTIAL BACKFILLING	1.00	BEND		
SPL - 10e	FITTING OF BENDS (100mmØ x 45° PVC Bend) W/ CONCRETE THRUST BLOCK & W/ PARTIAL BACKFILLING	6.00	BENDS		
SPL - 10f	HYDRO-TESTING & DISINFECTION WORKS (100mmØ PVC PIPELINE, CLASS 150, B/S with R.R.)	1,106.57	LN.M.		
SPL - 10g	PIPELINE FLUSHING (100mmØ PVC PIPELINE, CLASS 150, B/S with R.R.)	1,106.57	LN.M.		
SPL - 10h	VALVES/FITTINGS/INTER-CONNECTION WORKS	12.00	ASSY.		
SPL - 10i	INSTALLATION OF ONE (1) - UNIT - 75mm Ø FIRE HYDRANT WITH CONCRETE BARRICADE (Tapped on 100mmØ PVC Pipeline)	1.00	ASSY.		
SPL - 10j	INSTALLATION OF 25mm Ø AIR RELEASE ASSEMBLY WITH CONCRETE BARRICADE (Tapped on 100mmØ PVC Pipeline)	4.00	ASSY.		
SPL - 10k	BACKFILLING & COMPACTION WORKS OF NATIVE MATERIALS	452.26	CU.M.		
7. PROPOSED 150mmØ PVC DISTRIBUTION LINE CONNECTING BUNGUIAO TOUWA PROJECT & EXISTING LINE AT SANGALI					
SPL - 11a	AS-STAKED SURVEY/ PREPARATION OF AS-STAKED PLAN/ CONSTRUCTION DRAWING/ LAYOUTING/ LINE AND GRADE	1,825.56	LN.M.		
SPL - 11b	CONCRETE CUTTING	1,864.52	LN.M.		
101(4)a	REMOVAL OF EXISTING CONCRETE PAVEMENT	932.26	SQ.M.		
103(1)a	STRUCTURE EXCAVATION (COMMON SOIL)	898.54	CU.M.		
SPL - 11c	PIPELINES & APPURTENANCES (150mmØ PVC-O PIPELINE, PN 16, B/S with R.R.) W/ PARTIAL BACKFILLING	1,825.56	LN.M.		

SPL - 11d	FITTING OF BENDS (150mmØ x 11.25° PVC-O Bend) W/ CONCRETE THRUST BLOCK & W/ PARTIAL BACKFILLING	4.00	BENDS		
SPL - 11e	FITTING OF BENDS (150mmØ x 45° PVC-O Bend) W/ CONCRETE THRUST BLOCK & W/ PARTIAL BACKFILLING	19.00	BENDS		
SPL - 11f	HYDRO-TESTING & DISINFECTION WORKS (150mmØ PVC-O PIPELINE, PN 16, B/S with R.R.)	1,825.56	LN.M.		
SPL - 11g	PIPELINE FLUSHING (150mmØ PVC-O PIPELINE, PN 16, B/S with R.R.))	1,825.56	LN.M.		
SPL - 11h	VALVES/FITTINGS/INTER-CONNECTION WORKS	3.00	ASSY.		
SPL - 11i	INSTALLATION OF TWO (2) - UNITS - 75mm Ø FIRE HYDRANT WITH CONCRETE BARRICADE (Tapped on 150mmØ PVC-O Pipeline)	2.00	ASSY.		
SPL - 11j	INSTALLATION OF 50mm Ø AIR RELEASE ASSEMBLY WITH CONCRETE BARRICADE (Tapped on 150mmØ PVC-O Pipeline)	2.00	ASSY.		
SPL - 11k	CULVERT CROSSING WITH CONCRETE ENCASEMENT	2.05	LN.M.		
SPL - 11l	BACKFILLING & COMPACTION WORKS OF NATIVE MATERIALS	402.04	CU.M.		
201	AGGREGATE BASE COURSE	260.32	CU.M.		
200	AGGREGATE SUBBASE COURSE	251.93	CU.M.		
311(1)a	PCC PAVEMENT(PLAIN) - CONVENTIONAL METHOD, 280MM THICK	932.26	SQ.M.		
SPL - 11m	INSTALLATION OF DOWEL BAR FOR ITEM 311 RESTORATION	1,473.21	KGS.		
				TOTAL PROJECT COST	

Prepared & Submitted by:

BIDDER'S REPRESENTATIVE

VII. PREPARATION OF ESTIMATES/ FINANCIAL BID

In the preparation of the detailed estimates or financial bid, the DPWH Department Order No. 197, Series of 2016 shall be followed as shown below.

7.1 DIRECT COST

The **Estimated DIRECT COST** shall consist of the following:

7.1.1 **Cost of materials** to be used in doing the work item called for, which shall include, inter alia, the following:

- Cost at source, including processing, crushing, stockpiling, loading, royalties, local taxes, construction and/or maintenance of haul roads, etc.
- Expenses for hauling to project site.
- Handling expenses.
- Storage expenses.
- Allowance for waste and/or losses, not to exceed 5% of materials requirement.

7.1.2 **Cost of Labor** this shall include the following:

- Salaries and wages, as authorized by the Department of Labor and Employment.
- Fringe benefits, such as vacation and sick leaves, benefits under the Workmen's Compensation Act, GSIS and/or SSS contributions, allowances, 13th month pay, bonuses, etc.

7.1.3 **Equipment Expenses**

Rental rates of equipment shall be based on the prevailing "Association of Carriers and Equipment Lessors, (ACEL) Inc." approved for use by the DPWH (Presently it is the 2014 ACEL Rates). Rental rates of equipment not indicated in the ACEL booklet shall be taken from the rental rates prepared by the Bureau of Equipment. For simplicity in computation, the operated rental rates are preferred over the bare rental rates as the former includes operator's wages, fringe benefits, fuel, oil, lubricants and equipment maintenance. The make, model and capacity of the equipment should be indicated in the detailed unit cost analysis.

Mobilization and Demobilization shall be treated as a separate pay item. It shall be computed based on the equipment requirements of the project stipulated in the proposal and contract booklet. Mobilization and demobilization shall not exceed 1% of the Estimated Direct Cost (ECD) of the civil works items.

7.2 INDIRECT COST

The Indirect Cost shall consist of the following

7.2.1 Overhead Expenses which include the following:

- Engineering and Administrative Supervision.

- Transportation allowances.
- Office Expenses, e.g., for office equipment and supplies, power and water consumption, communication and maintenance.
- Premium on Contractor's All Risk Insurance (CARI).
- Financing Cost such as Premium on Bid Security, Premium on Performance Security, Premium on Surety for Advance Payment, Premium on Warranty Bond (one year).
- Fees, Permits and clearances.
- Provision of service vehicle.

7.2.2 Contingencies includes the following:

- Expenses for meetings, coordination with other stakeholders, billboards (excluding Project Billboard which is a pay item under the General Requirements), stages during ground breaking & inauguration ceremonies, and other unforeseen events.

7.2.3 Miscellaneous Expenses - These include laboratory tests for quality control and plan preparation.

7.2.4 Contractor's Profit Margin

The margin of contractor's profit shall be in accordance with the table below. The profit is computed as the profit mark-up multiply by the Estimated Direct Cost.

7.2.5 Value Added Tax (Vat) Component

Which shall be the five (5) percent of the summation of Estimated Direct Cost, Overhead, Contingencies & Miscellaneous (OCM) and Contractor's Profit.

7.2.6 OCM and Profit Mark-Up

7.2.6.1 The following items shall not be subjected to OCM and Profit mark-up:

- Mobilization and Demobilization

7.2.6.2 The following non-civil works items shall not be subjected to OCM mark-up:

- Field/Laboratory Office & Living Quarters (Rental Basis)
- Furnishing of Furniture, Laboratory Equipment, Survey Equipment and Consumables
- Assistance to the Engineers
- Photographs

- Health and Safety
- Environmental Certificate
- Traffic Management
- Communication Equipment, etc.

7.2.6.3 The detailed estimates for this project shall not exceed with the following mark-ups:

Estimated Direct Cost	OCM	Profit	Value Added Tax (VAT)
Above 5 Million up to P50 Million	12%	8%	5%

Please refer to DPWH D.O. No. 197, Series of 2016

VIII. SIGNATORIES

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