REQUEST FOR QUOTATION (RFQ)
(Goods and Service)

To: All Interested Bidders	DATE: September 4, 2019
	REFERENCE: RFQ/UNDP/SSTC/80334/045/2019 - **Purchase and Installation of Solar Water Pumping System**

Dear Sir / Madam:

We kindly request you to submit your quotation for **Purchase and Installation of Solar Water Pumping System**, as detailed in Annex 1 of this RFQ. When preparing your quotation, please be guided by the form attached hereto as Annex 2.

Quotations may be submitted on or before September 11, 2019, COB (GMT +7) and via ☒*e-mail,* to the address below:

United Nations Development Programme
7th Floor, Menara Thamrin Building, Jl. M.H. Thamrin Kav. 3, Jakarta 10250
Head of Procurement Unit
Bids.id@undp.org

Quotations submitted by email must be limited to a maximum of 8 (eight) MB per transmission, virus-free and no more than 6 (six) email transmissions. They must be free from any form of virus or corrupted contents, or the quotations shall be rejected.

It shall remain your responsibility to ensure that your quotation will reach the address above on or before the deadline. Quotations that are received by UNDP after the deadline indicated above, for whatever reason, shall not be considered for evaluation. If you are submitting your quotation by email, kindly ensure that they are signed and in the .pdf format, and free from any virus or corrupted files.

Please take note of the following requirements and conditions pertaining to the supply of the abovementioned good/s:

Delivery Terms [INCOTERMS 2010] *(Pls. link this to price schedule)*	☐FCA ☐CPT ☐CIP ☒DAP ☐Other *[pls. specify]*	
Customs clearance[1], if needed, shall be done by:	☐UNDP ☒Supplier/Offeror ☐Freight Forwarder	
Exact Address/es of Delivery Location/s (identify all, if multiple)	Dusun 3, Napan Village, North Bikomi Sub-District, Timor Tengah Utara District, East Nusa Tenggara Province	
UNDP Preferred Freight Forwarder, if any[2]	N/A	
Distribution of shipping documents *(if using freight forwarder)*	N/A	
Latest Expected Delivery Date and Time *(if delivery time exceeds this, quote may be rejected by UNDP)*	☒ 66 (sixty six) weeks from the issuance of the Contract ☐ As per Delivery Schedule attached *[if delivery will be staggered]* Time : *[pls. indicate]* Time Zone of Reference : *[pls. indicate]*	
Delivery Schedule	☒Required ☐Not Required	
Packing Requirements	☒Required	
Mode of Transport	☐ AIR	☐LAND
	☐SEA	☒OTHER any mode proposed by bidder in complying to the the delivery time
Preferred Currency of Quotation[3]	☒United States Dollars ☐Euro ☒Local Currency : IDR for Local Bidders	
Value Added Tax on Price Quotation[4]	☐ Must be inclusive of VAT and other applicable indirect taxes ☒ Must be exclusive of VAT and other applicable indirect taxes	

[1] *Must be linked to INCO Terms chosen.*
[2] *Depends on INCO Terms. The suggestion to use a UNDP preferred courier is only for purposes of familiarity with procedures and documentary requirements applicable to the UNDP when clearing with customs.*
[3] *Local vendors must comply with any applicable laws regarding doing business in other currencies. Conversion of currency into the UNDP preferred currency, if the offer is quoted differently from what is required, shall be based only on UN Operational Exchange Rate prevailing at the time of UNDP's issuance of Purchase Order.*
[4] *This must be reconciled with the INCO Terms required by the RFQ. Furthermore, VAT exemption status varies from one country to another. Pls. tick whatever is applicable to the UNDP CO/BU requiring the goods.*

After-sales services required	☒Warranty on Parts and Labor for minimum period of as specified in Annex I ☒Technical Support ☒Provision of Service Unit when pulled out for maintenance/ repair during installation period ☐ Others *[pls. specify]*
Deadline for the Submission of Quotation	COB, *Wednesday, September 11, 2019 and COB (GMT+7)*
All documentations, including catalogs, instructions and operating manuals, shall be in this language	☒ English ☐ French ☐ Spanish ☒ Others except for catalogs, instruction, and operating manuals
Documents to be submitted[5]	☒ Duly Accomplished Form as provided in Annex 2, and in accordance with the list of requirements in Annex 1; ☒ A statement whether any import or export licenses are required in respect of the goods to be purchased including any restrictions on the country of origin, use/dual use nature of goods or services, including and disposition to end users; ☐ Confirmation that licenses of this nature have been obtained in the past and an expectation of obtaining all the necessary licenses should the quotation be selected; ☒ Quality Certificates (ISO, etc.); ☒ Latest Business Registration Certificate ; ☒ Latest Internal Revenue Certificate / Tax Clearance; ☐ Manufacturer's Authorization of the Company as a Sales Agent (if Supplier is not the manufacturer); ☐ Certificate of Exclusive Distributorship in the country (if applicable, and if Supplier is not the manufacturer); ☐ Evidence/Certification of Environmental Sustainability ("Green" Standards) of the Company or the Product being supplied ; ☐ Complete documentation, information and declaration of any goods classified or may be classified as "Dangerous Goods". ☐ Patent Registration Certificates (if any of technologies submitted in the quotation is patented by the Supplier); ☒ Written Self-Declaration of not being included in the UN Security Council 1267/1989 list, UN Procurement Division List or other UN Ineligibility List; ☐ Others *[pls. specify as many as required]*
Period of Validity of Quotes starting the Submission Date	☒ 60 days ☐ 90 days ☐ 120 days In exceptional circumstances, UNDP may request the Vendor to extend the validity of the Quotation beyond what has been initially

[5] *First 2 items in this list are mandatory for the supply of imported goods*

	indicated in this RFQ. The Proposal shall then confirm the extension in writing, without any modification whatsoever on the Quotation.
Partial Quotes	☒ Not permitted ☐ Permitted [*pls. provide conditions for partial quotes, and ensure that requirements are properly listed to allow partial quotes (e.g., in lots, etc.)]*
Payment Terms[6]	☐ 100% upon complete delivery of goods ☒ Others As specified in Annex I
Liquidated Damages	☒ Will be imposed under the following conditions : Percentage of contract price per day of delay : 0,5% Max. no. of days of delay : 2 (two) weeks
Evaluation Criteria *[check as many as applicable]*	☒ Technical responsiveness/Full compliance to requirements and lowest price[7] ☒ Comprehensiveness of after-sales services ☒ Full acceptance of the PO/Contract General Terms and Conditions *[this is a mandatory criteria and cannot be deleted regardless of the nature of services required]* ☐ Earliest Delivery / Shortest Lead Time[8] ☐ Others *[pls. specify]*
UNDP will award to:	☒ One and only one supplier ☐ One or more Supplier, depending on the following factors: *[Clarify fully how and why will this be achieved. Please do not choose this option without indicating the parameters for awarding to multiple Suppliers]*
Type of Contract to be Signed	☐ Purchase Order ☐ Long-Term Agreement[9] *(if LTA will be signed, specify the document that will trigger the call-off. E.g., PO, etc.)* ☒ Other Type/s of Contract Professional Service Contract
Special conditions of Contract	☒ Cancellation of PO/Contract if the delivery/completion is delayed by 2 (two) weeks

[6] *UNDP preference is not to pay advanced amount upon signing of contract. If vendor strictly requires advanced payment, it will be limited only up to 20% of the total price quoted. For any higher percentage, or advanced payment of $30,000 or higher, UNDP shall require the vendor to submit a bank guarantee or bank checque payable to UNDP, in the same amount as the advanced payment made by UNDP to the vendor.*

[7] *UNDP reserves the right not to award the contract to the lowest priced offer, if the second lowest price among the responsive offer is found to be significantly more superior, and the price is higher than the lowest priced compliant offer by not more than 10%, and the budget can sufficiently cover the price difference. The term "more superior" as used in this provision shall refer to offers that have exceeded the pre-determined requirements established in the specifications.*

[8] *This shall be used for time-critical and/or exigent requirements (e.g., post-crisis emergencies, elections, etc.).*

[9] *Minimum of one (1) year period and may be extended up to a maximum of three (3) years subject to satisfactory performance evaluation*

	☐ Others *[pls. specify]*
Conditions for Release of Payment	☒ Passing Inspection (upon confirmed by UNDP Consultant) ☒ Complete Installation ☒ Passing all Testing (upon confirmed by UNDP Consultant) ☒ Completion of Training on Operation and Maintenance (upon confirmed by UNDP Consultant) ☒ Written Acceptance of Goods based on full compliance with RFQ requirements ☒ Others As per list of Deliverable specified in the TOR/Contract
Annexes to this RFQ[10]	☒ Specifications of the Goods Required (Annex 1) ☒ Form for Submission of Quotation (Annex 2) ☒ General Terms and Conditions / Special Conditions (Annex 3). ☐ Others *[pls. specify, if any]* Non-acceptance of the terms of the General Terms and Conditions (GTC) shall be grounds for disqualification from this procurement process.
Contact Person for Inquiries (Written inquiries only)[11]	Abriliany Lintang Kirana and Yusef Saiful millah *Procurement Unit* *abriliany.kirana@undp.org and yusef.millah@undp.org* Any delay in UNDP's response shall be not used as a reason for extending the deadline for submission, unless UNDP determines that such an extension is necessary and communicates a new deadline to the Proposers.

Goods offered shall be reviewed based on completeness and compliance of the quotation with the minimum specifications described above and any other annexes providing details of UNDP requirements.

The quotation that complies with all of the specifications, requirements and offers the lowest price, as well as all other evaluation criteria indicated, shall be selected. Any offer that does not meet the requirements shall be rejected.

Any discrepancy between the unit price and the total price (obtained by multiplying the unit price and quantity) shall be re-computed by UNDP. The unit price shall prevail and the total price shall be corrected. If the supplier does not accept the final price based on UNDP's re-computation and correction of errors, its quotation will be rejected.

After UNDP has identified the lowest price offer, UNDP reserves the right to award the contract based only on the prices of the goods in the event that the transportation cost (freight and insurance) is

[10] *Where the information is available in the web, a URL for the information may simply be provided.*
[11] *This contact person and address is officially designated by UNDP. If inquiries are sent to other person/s or address/es, even if they are UNDP staff, UNDP shall have no obligation to respond nor can UNDP confirm that the query was received.*

found to be higher than UNDP's own estimated cost if sourced from its own freight forwarder and insurance provider.

At any time during the validity of the quotation, no price variation due to escalation, inflation, fluctuation in exchange rates, or any other market factors shall be accepted by UNDP after it has received the quotation. At the time of award of Contract or Purchase Order, UNDP reserves the right to vary (increase or decrease) the quantity of services and/or goods, by up to a maximum twenty five per cent (25%) of the total offer, without any change in the unit price or other terms and conditions.

Any Purchase Order that will be issued as a result of this RFQ shall be subject to the General Terms and Conditions attached hereto. The mere act of submission of a quotation implies that the vendor accepts without question the General Terms and Conditions of UNDP herein attached as Annex 3.

UNDP is not bound to accept any quotation, nor award a contract/Purchase Order, nor be responsible for any costs associated with a Supplier's preparation and submission of a quotation, regardless of the outcome or the manner of conducting the selection process.

Please be advised that UNDP's vendor protest procedure is intended to afford an opportunity to appeal for persons or firms not awarded a purchase order or contract in a competitive procurement process. **In the event that** you believe you have not been fairly treated, you can find detailed information about vendor protest procedures in the following link:
http://www.undp.org/content/undp/en/home/operations/procurement/protestandsanctions/

UNDP encourages every prospective Vendor to avoid and prevent conflicts of interest, by disclosing to UNDP if you, or any of your affiliates or personnel, were involved in the preparation of the requirements, design, specifications, cost estimates, and other information used in this RFQ.

UNDP implements a zero tolerance on fraud and other proscribed practices, and is committed to identifying and addressing all such acts and practices against UNDP, as well as third parties involved in UNDP activities. UNDP expects its suppliers to adhere to the UN Supplier Code of Conduct found in this link : http://www.un.org/depts/ptd/pdf/conduct_english.pdf

Thank you and we look forward to receiving your quotation.

Sincerely yours,

Martin Stephanus Kurnia
Procurement Analyst
4th September 2019

Annex 1

Terms of Reference

Purchase and Installation of Solar Water Pumping System

A. Background, Rationale and Project Description

The "Partnership Initiative for Institutional Development of Indonesia's South-South and Triangular Cooperation" project is a project implemented by UNDP Indonesia with support from the Royal Norwegian Embassy, under coordination from the Indonesia's Ministry of Foreign Affairs. The project is focusing on the achievement of three main outputs:

1) enhanced institutional capacity in coordinating and managing Indonesia's South-South and Triangular Cooperation;
2) South-South Triangular initiative implemented: peacebuilding through cross-border local economic development between Indonesia and Timor-Leste;
3) enhanced Indonesia's role on global SSTC forum.

The initiatives under the second output seek to support the Ministry of Foreign Affairs (MoFA) in its mandate as leading ministry in the establishment of Indonesia's international development cooperation agency, including SSTC initiatives. The Peacebuilding through Local Economic Development in the Indonesia and Timor-Leste Border is an initiative to support both the Indonesian and Timor-Leste governments in developing an SSTC framework that would involve the local border communities through development of their economies and through the promotion of economic exchanges between the bordering communities.

The area that this initiative focuses on is the Oesillo (Oe-cusse, Timor-Leste) and Napan (Timor Tengah Utara, Indonesia) border area. The key stakeholders of this initiative include the provincial government of East Nusa Tenggara, district government of Timor Tengah Utara, the Regional Government of Oecusse and the Zone for Social Market Economy of Timor-Leste (ZEESM TL) authority.

The selection of Oesillo and Napan border area is based on a number of reasons. As an enclave, Oe-cusse's location is separated from the other areas of Timor-Leste and entirely surrounded by the Indonesian territory of East Nusa Tenggara (Timor Tengah Utara, Belu and Kupang districts), and in the north by the Savu Sea. As a consequence, Oe-cusse is economically dependent on Indonesia. The delivery of basic necessities supply to the Oe-cusse region from the main area of Timor-Leste depends on the weekly shipment from Dili. Moreover, mobilization of supplies from the territory of Timor-Leste must at least pass through the territorial waters and land of Indonesia to reach Oe-cusse. The Napan – Oesillo border area is considerably less developed compared to the other borderareas. The communities in both Napan and Oesillo share a common ancestry, which is the Dawan tribe, and many of the community members in both areas have familial connections through marriages. Consequently, traditional trading and gathering are still being done by and between both communities.

The condition of the soil in Napan is very dry. The rainy season only lasts for 4 months in a year and the contour of the land is hilly. Despite the scarcity of water, most people in Napan depend on horticulture and cattle farming as their main source of income. There are a number of staple food crops that are grown

in this area, namely corn, rice, cassava, sweet potato and yams. In 2016, Napan village produced 3.5 ton of corn and 4.5 tons of rice[12]. Beside staple food crops they also produce some vegetables crop and plantation products for local consumption.

During a joint-mission by UNDP Indonesia and the Ministry of Foreign Affairs in 2018, it was found that there is currently one existing well in Napan located in a privately-owned land near the Indonesian border post, which is available for common use by the community members. The water in this well, however, is considered highly calcareous, therefore unsafe for consumption, according a border official. Additionally, there was one water spring located around 500m from the Indonesian border post. However, due to its far distance from people's houses, this water source is not easily accessible.

According to the data provided by the official website of Napan village[13], there are 8 (eight) springs in good condition, which are utilized by 50 household; 41 wells utilized by 207 households, but dry up during the dry season, 2 (two) water reservoirs in good condition, utilized by 50 households. There is also 1 (one) piped water source which is in good condition, but the usage was not stated on the website.

The village head initiated the provision of water tanks procured using funds from the Village Fund (*Dana Desa)*, which are distributed to each household free of charge. To fulfil their daily needs (for drinking, cooking, cleaning, and bathing) people in Napan buy water that is transported from Kefamenanu. The water is transported using water tank trucks. These water tank trucks normally contains 5000 liter of water, which costs IDR 250,000 per delivery. For each delivery, a household usually buys the water collectively with four other households in the neighbours, which cost one household IDR 50,000 per 1000 liter. While the initiative of the village head has helped relieve the challenges of water scarcity, the high cost of regular purchase of clean water from Kefamenanu can be burdensome for the people of Napan.

B. Objectives

Given the scarcity of clean water in Napan and how essential the use of water in human's daily life, it is considered urgent and vitally important to seek ways for water provision for the people in Napan. Therefore, in response to this need, UNDP Indonesia is seeking a service provider for the Solar Water Pumping System Installation in Napan Village.

The main objectives of this service are:

1. Carry out activity to develop one Solar PV Water Pumping System and water reservoir tank in selected site in Napan Village based on Detailed Engineering Design of Solar PV water pumping system to be provided by UNDP.
2. Provide clean water streamed to the water reservoir tank to be accessed by residents of Napan Village.

C. Scope of Work and Expected Outputs

To meet the above objectives, the Service Provider will provide expertise and mobilize necessary resources to deliver the following tasks:

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[12] http://napan.desa.id/profil/profil-desa-napan/

[13] *Idem*

C.1 The Selected company must provide and implement a quality management system, which can be traced and verified.

C.2 Procurement

The Selected company must provide the necessary Mechanical & Electrical components accompanied by the spare parts listed on Indonesian National Standard (SNI).

C.3 Construction

The Selected Company must do the construction work (water well drilling, pipe installation, solar power water pump installation, reservoir, general hydrant, solar panel fence) until the conditions are ready for running, testing and meet the quality and safety assurance standards). The specification of civil construction should be referred to technical specification (Detailed Engineering Design of Solar PV water pumping system to be provided by UNDP). The company must provide all equipment, human resource management as well as Health, Safety and Environment (HSE).

C.4 Commissioning

The company should be responsible for commissioning, including performance tests until initial acceptance by local community. The company should provide technician, equipment and service during start-up, commissioning.

C.5 Training for Solar PV water pumping system Operators

The Company should conduct training for potential operators of Solar PV water pumping system in operating and maintenance, minimum 3 persons which names will be suggested by head of Village.

C.6 Guarantee

The company should provide after sales guarantee i.e.:
Solar PV and Water Pump: service and spare parts for 1 year
Civil Engineering: repair services for 1 year
The company should conduct scheduled inspection at least twice a year (6^{th} month and 12^{th} month upon operation date or since commissioning)

D. Specifications:

Complete specification for the installation of Solar Water Pumping System and the Detailed Engineering Design of Solar PV water pumping system are attached.

E. Targeted Area

The solar PV water pumping system will be installed in Dusun 3, Napan Village, North Bikomi Sub-District, Timor Tengah Utara District, East Nusa Tenggara Province. Due to the distance between this location and residential area in Napan, a water reservoir tank needs to be built approximately 197 meters from the water pump location, in order to allow distribution water to the residents' houses.

The coordinate for the location

Position	Latitude	Longitude
Water Well & Solar PV System	09°22'02.48"	124°24'18.36"
Reservoir	09°22'13.43"	124°24'11.97"
General Hydrant	09°22'02.63"	124°24'17.89"

F. Deliverables and Terms of Payment

Deliverables/ Outputs	Estimated Duration to Complete	Review and Approvals	Payment Percentage
1. Approved workplan, permit to start working, timeline and final detailed engineering design	Upon contract signing	PIID-ISSTC NPM	15%
2. Purchase order of Civil engineering components, Mechanical & Electrical components	4 (four) weeks from contract signing	PIID-ISSTC NPM	25%
3. Complete Installation, commissioning and testing including approved report in: a. Report on installation, commissioning, and testing of the solar-powered water pump b. Manual or Standard Operating Procedure of the solar-powered water pumping system c. Training report	Within 12 (twelve) weeks from contract signing	PIID-ISSTC NPM	50%
4. Approved report on maintenance service/inspection during the period of guarantee (6th month and 12th month upon operation date or since commissioning)	Within 52 (fifty-two) weeks from installation	PIID-ISSTC NPM	10%

G. Period of performance and review/approval time needed

This service will be carried within three months, and it is expected to be commencing during the Mid-September 2019 until Mid-December 2019 (does not include the warranty/maintenance period).

H. Facilities to be provided by UNDP

Details information about project sites location of the solar systems to be installed or planned to be installed including site maps and Detailed Engineering Design of Solar PV water pumping system.

I. Company Qualification

1. The Company has a construction business license with qualification SBU (Certificate License) Mechanical and Electrical- implementation services of Solar PV water pumping system Civil Engineering – Implementing service of construction of well, reservoir, general hydrant and other water resources infrastructure.
2. Minimum experience of 2 (two) Solar PV water pumping system projects.
3. Proficient experience resource, planning, construction and supervision of Solar PV water pumping system:
   Project Manager should have educational background on engineering (civil/electrical/mechanical) with at least 5 years of experience in similar project.
4. The company should own human resources and equipment to support the implementation of construction and installation refer to SNI by providing list of equipment & CV.
5. Knowledge on the implementation of the Guideline on the Health and Safety Management System of Public Works No: 05/PRT/M/2014

TECHNICAL SPECIFICATION

A. SOLAR MODULE:

Technical Specifications of Solar Modules

a.	Type	: P100A36, 24 Pc 2.400 Wp, 8x3 modules 15 titled
b.	Material	: Mono/Polycrystalline Silicon
c.	Rate Maximum Power	: 100 Wp (1 pc)
d.	Dimension	: 1020 x 670 x 30 mm (1 pc)
e.	Height	: 7.5 kg (1 pc)
f.	Cell efficiency	: 17.2 % (1 pc)
g.	Maximum Power Voltage (VMP)	: 18.05 v (1 pc)
h.	Maximum Power Current (VOC)	: 5.54A (1 pc)
i.	Power tolerance per module	: 5% (Five percent)
j.	Junction – box	: Equipped with cable gland / DC-Multi Connector
k.	Certification	: Indonesian National Standards (SNI)
l.	Efficiency	: At least 15% (fifteen percent) (mono/polycrystalline silicon)
m.	Warranty	: at least 20 (twenty) years of output degradation <20% (twenty percent)

n. Label containing module's performance data is attached at the back of the module

B. Submersible pumps:

Minimum Specification:

a.	General	: Pump type Submersible PS 1,800 SJ 5-25

b.	Output	: 18 m3/Days
c.	Head Capacity	: max. 140 m
d.	Output Flow Rate	: max 1.537 m3/Hours
e.	The certification	: ISO 9001
f.	Efficiency	: > 90% (ninety percent)
g.	Protection System	: High Voltage Disconnect (HVD), Low Voltage Disconnect (LVD), Short Circuit Protection
h.	Cable Motor	: 50 M (2.5 mm 3 Phase cable for power and 1phase cable for Ground
i.	Accessories	: 1 set (well probe V2, Surya Protector, PV Disconnect 440-40-3
j.	Warranty	: At least 1 (one) year for solar panel and submersible machine

C. Pipe:

Minimum Specification:

a.	General	: Pipe HDPE SDR 17 PN-10 Dimension 1,5 dim, OD: 50 mm, Thickness: 3,0 mm, weigh 0.444 kg/m : Pipa HDPE SDR 17 PN-10 Dimension 1 dim, OD: 32 mm, Thickness: 2,0 mm, weight 0.190 kg/m
b.	Certification	: SNI

D. Water Well

Minimum Specification:

a.	General	: Drilling diameter. 8 "
b.	Depth	: 80 M
c.	Casing	: Pipe AW 6"
d.	Low carbon steel filter pipe	: diameter 6 inches = 9 m

E. Reservoir Tub

Minimum Specification:

a.	General	: Capacity 18 M^3
b.	Foundation	: Stone pair 1:5
c.	Wall	: Concrete K 175

F. Public Hydrant Tub

Minimum Specification:

a.	General	: Capacity 3 M^3
b.	Foundation	: Stone pair 1:5
c.	Wall	: Brick Couple
d.	Concrete	: K 175

G. Panel Safety Fence

Minimum Specification:

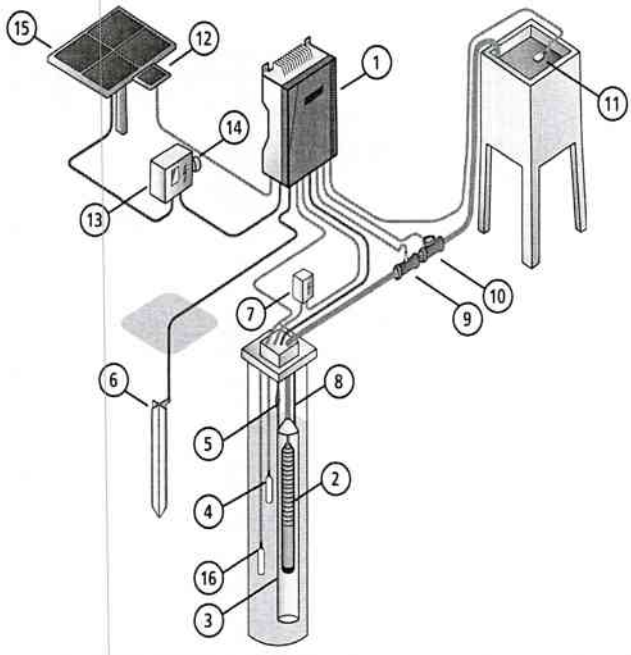
a.	General	: Size 42 M^2
b.	Foundation	: Stone pair 1:5

c. Wall : Iron box fence in welding and finishing paint

H. Shipping and packaging:

1. Submersible pump must be packaged at the time of shipment to prevent damage;
2. Solar modules must be packaged separately (not combined with support modules and other materials);
3. At the time of shipment, all items must be insured.

EXAMPLE OF A SIMPLE SOLAR PUMP SCHEME



1: PS2 Controller	11: Float Switch
2: Submersible Pump	12: Sun Switch
3: Flow Sleeve	13: PV Disconnect
4: Well Probe	14: Lightning Surge Protector
5: Cable Splice Kit	15: PV Generator
6: Grounding Rod	*It is recommended to install a Surge Protector at each controller sensor input.
7: Surge Protector*	
8: Safety Rope	
9: Water Meter	
10: Pressure Sensor	

TIME SCHEDULE

RFQ/UNDP/SSTC/80334/045/2019 - Purchase and Installation of Solar Water Pumping System

Province : **NTT**
District : **TTU**
Village : **Napan**
Type of work : **Solar Water Pump Instalation**

No.	Activity	Volume	unit	Plan/ Actual	Month I				Month II				Month III				Remark
									I	II	III	IV	I	II	III	IV	
1	2	3	4	7	8	9	10	11	12	13	14	15	16	17	18	19	24
1	Preparation work	1.00	umpsur	Plan		-											
				Actual													
2	Water pump Drill (50 - 80 m)	80.00	M	Plan													
				Actual													
3	Procurement of material for water pump	1.00	Package	Plan													
				Actual													
4	Pump Test	1.00	Package	Plan													
				Actual													
5	Water Pump Finishing	1.00	Ls	Plan													
				Actual													
6	Instalation of solar water pump	1.00	Package	Plan													
				Actual													
7	Piping Network Instalation	1,400.00	M	Plan													
				Actual													
8	Reservoir Construction work	1.00	Unit	Renc.													
				Real.													
9	Public Hydrant construction work	1.00	Unit	Plan													
				Actual													
10	Solar Panel Safety Fence work	1.00	Unit	Plan													
				Actual													
TOTAL																	
TOTAL PLAN					-	-	-	-	-	-	-	-	-	-	-	-	
CUMULATIVE PLAN					-	-	-	-	-	-	-	-	-	-	-	-	

District : TTU
Sub District: Bikomi Utara
Village : Napan

Type of facility : : Public Hydrant
Location : Desa Napan
Volume : 700 m

Sectional Images	Volume Calculation	Needs for Tool, Material and Working Day People	Sum Up
Instalation of Pipe HDPE 1 1/2 "	Number of Pipe	**Working Day People (WDP)**	
	= 700 / 100 .= 7.00 roll		
	= 7	Worker 0.05 x 700 = 35.00	35.00 WDP
	= **7.00 roll**	Plumber 0.025 x 700 = **17.50**	17.50 WDP
	Accercoris Pipa	**Material Need**	
Pipe length 700 m			
	= **700** / 100 = 7	Pipe HDPE 1 1/2 Dim = 7.00	7.00 roll
	= **7**		
	Shock	Coupler HDPE 1.5 dim = 7.00	7.00 Piece
	= 700 / 100 = 7 piece	Elbow L 1.5 dim = 4.00	4.00 Piece
	= Total Coupler HDPE 1.5 di = **7 piece**		
	7 piece		
	Elbow L 1.5 dim = **4** piece		
Instalation of Pipe HDPE 1 "	**Banyaknya Pipa**	**Working Day People Need**	
	= 700 / 100 .= 7.00 roll		
	= 7	Worker 0.05 x 700 = 35.00	35.00 WDP
	= **7.00 roll**	Plumber 0.025 x 700 = **17.50**	17.50 WDP
	Accercoris Pipe	**Material Need**	
Pipe lenght 100 m			
	= **700** / 100 = 7	Pipe HDPE 1 Dim = 7.00	7.00 roll
	= **7**		
	Shock	Coupler HDPE 1 dim = 7.00	7.00 piece
	= 700 / 100 = 1 **piece**	Elbow L 1 dim = 6.00	6.00 piece
	= total Coupler HDPE 1.5 dir = **7 piece**		
	7 piece		
	Elbow L 1 dim = **6** piece		

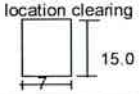
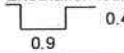
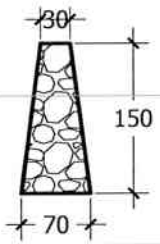
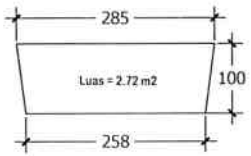
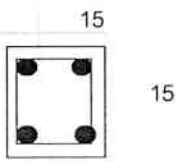
Total Need

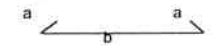
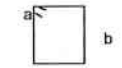
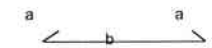
1	Pipe HDPE 1,5 Dim	=	700 m
2	Coupler HDPE 1.5 dim	=	7 piece
3	Elbow L 1,5 dim	=	4 piece
1	Pipe HDPE 1 Dim	=	700 m
2	Coupler HDPE 1 dim	=	7 piece
3	Elbow L 1 dim	=	6 piece

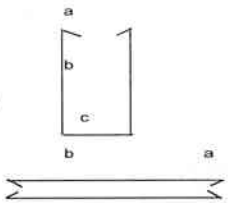
B WAGES/WORKING DAY PEOPLE

1	Worker	=	**70.00** Working Day People
2	Mason	=	**35.00** Working Day People

RESERVOAR CALCULATION

District : TTU Sub District : Bikomi Utara Village : Napan	Take Of Sheet	Type of activity. : Reservoar Location : Napan Volume : 3 X 3 X 2 M							Sum Up
1 location clearing 	Vol. = 4.00 x 4.00 = 16.0 m^2	WDP need worker	0.5	x	16.0	=	8	WDP	**8.0** WDP
2 Excavation foundation 	Foundation lenght = 12.0 m^1 Vol. = 0.90 x 0.8 x 25 = 18.00 m^3	worker	3.60	x	18.00	=	64.8	WDP	**65.0** WDP
3 Mixture for Foundation. **(1 cement:5 sand)** 	Vol. = $\frac{0.3 \times 0.70 \times 1.5 \times 12.00}{2}$ = 9 m3	worker	3.60	x	9.00	=	32.4	WDP	**33.0** WDP
		mason	1.2	x	9.00	=	10.8	WDP	**11.0** WDP
		Material need							
		sand	0.54	x	9.00	=	4.86	M3	**5.0** M3
		stone	1.2	x	9.00	=	10.8	M3	**11.0** M3
		cement	4.5	x	9.00	=	40.5	Sak	**41.0** Sak
4 Backfilling	Vol. = 1/4 x 0.00 = 0 m^3	worker	0.50	x	9.00	=	4.5	WDP	**5.0** WDP
5 Floor Exaltation Material 	Material Volume Vol. = 2.72 x 3.00 = 8.2 m^2	worker	0.75	x	8.16	=	6.12	WDP	**7.0** WDP
		material need							
		Granular	1.2	x	8.16	=	9.792	M3	**10.0** M3
6 Concrete Column Construction size 12/ 	**Mixture (1 cement : 2 sand : 3 split stone)** total column = 4 Bh column hight = 3.5 m volum = 0.15 x 0.15 x 3.50 x 4 = 0.32 m^3	worker	2.5	x	0.32	=	0.788	WDP	**1.0** WDP
		mason	7	x	0.32	=	2.205	WDP	**3.0** WDP
		Material need							
		sand	0.54	x	0.32	=	0.17	M3	**1.0** M3
		cement	8.50	x	0.32	=	2.678	Sak	**3.0** Sak
		split stone 2/3	0.82	x	0.32	=	0.258	M3	**1.0** M3
		Plywood 9 mm	2.77	x	0.32	=	0.873	Lbr	**1.0** piece
		Timber 5/7	0.08	x	0.32	=	0.024	M3	**0.02** M3
		Nail 5/7	1.00	x	0.32	=	0.315	Kg	**1.0** Kg

7	Column Beam	a.	Specification of steel bar used :					ϕ10		length	=	12	m			
			a = 0.03 m ; b = 3.5 m Total Column = 4 Piece											worker	3.5 x 0.32 = 1.103 WDP	**2.0** WDP
			steel bar length = 0.03 x 2 + 3.5 = 3.56 m											mason	7 x 0.32 = 2.205 WDP	**3.0** WDP
			total steel bar length = 3.56 x 4 x 4 = 57.0 m													
			total steel bar used = 57.0 / 12 = 5.22 Piece											Material		
														Steel bar 10 mm	= 5.22 Staf	**6.0 Staf**
		b.	Specification of steel bar used :					ϕ10		Pjg	=	11	m	steel bar 8 mm	= 3.94 Staf	**4.0 Staf**
			a = 0.03 m ; b = 0.1 m Cross bar distance = 0.15 m											tie wire	= 2 Kg	**2.0 Kg**
			steel bar length = 0.03 x 2 + 0.1 x 4 = 0.46 m													
			total cross bar used = 14 / 0.15 = 93 Piece													
			total steel bar used for crass bar = 93 x 0.46 = 42.9 m													
			= 42.9 / 12 = 3.94 Piece													
8	Sloof and ringbalk work size 15/20 cm		**Mixture (1 cement : 2 sand : 3 split stone)**											worker	2.5 x 0.72 = 1.8 WDP	2.0 WDP
	0.15		Length of Sloof and Ringbalk = 24 m											mason	7 x 0.72 = 5.04 WDP	6.0 WDP
	 20		Vol. = 0.15 x 0.2 x 24 = **0.72** m^3													
														material need		
														sand	0.54 x 0.72 = 0.389 M3	1.00 M3
														Cement	8.50 x 0.72 = 6.12 Sk	7.00 Sk
														split stone 2/3	0.82 x 0.72 = 0.59 M3	1.00 M3
														Split stone 2/3	0.82 x 0.72 = 0.59 M3	1.00 M3
														Plywood 9 mm	2.77 x 0.72 = 1.994 Lbr	2.00 piece
														Timber 5/7	0.08 x 0.72 = 0.054 M3	0.05 M3
														Nail 5/7	1.00 x 0.72 = 0.72 Kg	1.00 Kg
9	Steel bar for Sloof and Ring	a.	Specification of steel bar used :					ϕ10		length	=	12	m			
			a = 0.03 m ; b = 24 m											worker	3.5 x 0.72 = 2.52 WDP	**3.0** WDP
			steel bar length = 0.03 x 2 + 24 = 24.1 m											mason	7 x 0.72 = 5.04 WDP	**6.0** WDP
			Total steel bar length = 24.1 x 4 = 96 m													
			total steel bar used = 96 / 12 = 8.82 Piece											Material		
														Steel bar 10 mm	= 8.82 Staf	**9.0 Staf**
		b.	Specification of steel bar used :					ϕ10		length	=	12	m	steel bar 8 mm	= 6.75	**7.0 Staf**
			a = 0.03 m ; b = 0.10 m ; c = 0.1 m											tie wire	= 2 Kg	**2.0 Kg**
			Cross bar distance = 0.15 m											Hacksaw	= 3 Bh	**3.0 piece**
			steel bar length = 0.03 x 2 + 0.10 x 2 + 0.1 x 2 = 0.46 m													
			total cross bar used = 24.0 / 0.15 = 160 Piece													
			total steel bar used = 160 x 0.46 = 74 m													
			= 74 / 12 = 6.75 Piece													
10	Wall construction work = thick 12 cm		**Mixture (1 cement : 2 sand : 3 split stone)**											worker	3.5 x 3.60 = 12.6 WDP	13.0 WDP
			Vol. = 0.15 x 2.0 x 12 = 3.60 m^3											mason	7 x 3.60 = 25.2 WDP	26.0 WDP
														Material need		
														Sand	0.54 x 3.60 = 1.944 M3	**2.0 M3**
														Cement	8.50 x 3.60 = 30.6 Sk	**31.0 Sk**
														Split stone 2/3	0.82 x 3.60 = 2.952 M3	**3.0 M3**
														Plywood 9 mm	2.77 x 3.60 = 9.972 Lbr	**10.0 piece**
														Timber 5/7	0.08 x 3.60 = 0.27 M3	**0.3 M3**
														Nail 5/7	4.00 x 3.60 = 14.4 Kg	**15.0 Kg**

11	Steel bar for wall	a.	Upright reinforcement(U) :				ϕ **10"** - 20 cm , length	=	11	m				
			a = 0.03 ; b = 2.4 ; c = 4											
			Steel bar length = 0.03 x 2 + 0.00 x 0 + 4.00 = 4.06 m											
			total upright reinforcement used				= 12.00 / 0.2 = 60 Piece							
			total length of upright reinforcement				= 4.06 x 60 = 487							
			total steel bar used for upright reinforcement				= 487 / 12 = 44.7 Piece							
		b.	horizontal reinforcement:				ϕ **10"** - 20 cm , length	=	12	m				
			a = 0.03 m ; b = 12.00 m											
			steel bar length = 0.03 x 2 + 12.00 = 12.06 m											
			wall height = 2.00 m Distance between reinforcement = 20 cm											
			Total horizontal reinforcement				= 2.0 / 0.2 = 10 piece							
			steel bar length for 1 layer				= 12.06 x 10 = 121 m							
			Total steell bar length = 121 x 1 = 121 m											
			total steel bar used				= 121 / 12 = 11.1 Staf							
12	Tab Cover plate and floor work. thick =		**Mixture (1 cement : 2 sand : 3 split stone)**											
			Vol. = 0.15 x 3.30 x 3.30 = 1.63 m^3											
			= = 3.27 m3											
											worker	2.5	x 3.60	= 9 WDP **9.0 WDP**
											mason	8	x 3.60	= 28.8 WDP **29.0 WDP**
											Material			
											Steel bar 10 mm			= **55.7** Staf **56.0 Staf**
											Hacksaw			= 4.00 Bh **4.0 piece**
											tie wire			= 15 Kg 15.0 Kg
											worker	3.5	x 3.27	= 11.43 WDP **12.0 WDP**
											mason	7	x 3.27	= 22.87 WDP **23.0 WDP**
											Material need			
											sand	0.54	x 3.27	= 1.764 M3 **2.0 M3**
											cement	7.50	x 3.27	= 24.5 Sak **25.0 Sak**
											split stone 2/3	0.82	x 3.27	= 2.679 M3 **3.0 M3**
											Plywood 9 mm	2.77	x 3.27	= 9.05 Lbr **9.0 piece**
											Timber 5/7	0.08	x 3.27	= 0.245 M3 **0.2 M3**
											Nail 5/7	1.00	x 3.27	= 3.267 Kg **4.0 Kg**
13	steel bar for tab cover plate and floor		ϕ **10"** - 15 cm , Pjg = 12 m											
			a = 0.03 m ; b = 3.30 m											
			steel bar length = 0.03 x 2 + 3.3 = 3.36 m											
			Total line = 3.30 / 0.15 = 22.00 Line x 2 = 44 Line											
			Panjang Tulangan = 44.0 x 3.36 = 147.8 m											
			Total steel bar used				= 147.8 / 12 = 13.55 Stf							
			total steel bar used for tab cover plate and floor				= 13.6 x 2 = 27.104 Staf							
											worker	3.5	x 1.63	= 5.717 WDP **6.0 WDP**
											mason	7	x 1.63	= 11.43 WDP **12.0 WDP**
											Material			
											Steel bar 10 mm			13.55 = 13.6 Staf **14.0 Staf**
											Hacksaw			1 = 1.00 BH **1.0 piece**
											tie wire			8 = 8 Kg **8.0 Kg**
16	Concrete floor aroung the reservoar		length = 12.00 Wide 0.5											
	Mixture (1 cement : 3 sand : 5 split sto		Vol. = 0.10 x 0.50 x 12.00 = 0.60 M3											
	Thick += 0.10 m													
											worker	1.50	x 0.60	= 0.9 WDP **1.0 WDP**
											mason	0.75	x 0.60	= 0.45 WDP **1.0 WDP**
											Material need			
											sand	1.2	x 0.60	= 0.72 M3 **1.0 M3**
											stone	0.5	x 0.60	= 0.3 M3 **1.0 M3**
											cement	3	x 0.60	= 1.8 Sak **2.0 Sak**

Rekapitulasi

WDP

	Worker	= 167 WDP
	Mason	= 120 WDP
MATERIAL		
	Granular	10 M3
	Sand	= 12 M3
	Cement	= 109 Sak
	Stone	= 12 M3
	Split stone 2/3	= 9 M3
	Plywood 9 mm	= 22 piece
	Timber 5/7	= - M3 2
	Nail 5/7	= 20 Kg
	Steel bar 10 mm	= 85 Staf
	Steel Bar 8 mm	= 11 Staf
Tool		
	Tie Wire	= 27 Kg
	Hacksaw	= 8 piece

District : TTU
sub district : Bikomi Utara
Village : Napan

Take Of Sheet

Type of Facility : Public Hydrant
Location :
Volume : 1 Unit (1X1X1.5 m)

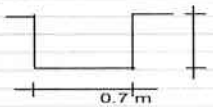
Sum Up

Sectional Images

Volume Calculation

Need for Material, tools and Working da

1. Foundation Sketch



Foundation Lenght 8 m

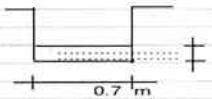
1.Foundation Excavation Volume Calculation

= 0.7 x 0.7 x 6 = 2.9 m3

Need for Working Day People (WDP)

Worker	1.1	x	2.9	=	3.23	3.00 WDP

2. Sand Dune Sketch



Foundation Lenght 8 m

2. Sand Dune Volume Calculation

= 0.7 x 0.07 x 6 = 0.294 m3

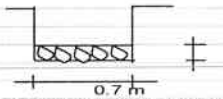
Need for Working Day People (WDP)

Worker	0.5	x	0.29	=	0.15	1.00 WDP

Need for Material

sand	1.1	x	0.294	=	0.32	1.00 M3

3. Stone structure sketch



Foundation Lenght 11.5 m

3. Stone Structure Calculation

= 0.7 x 0.15 x 6 = 0.63 m3

Need for Working Day People (WDP)

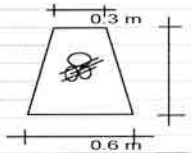
worker	1.5	x	0.63	=	0.95	1.00 WDP

Need for Material

stone	1.2	x	0.63	=	0.76	1.00 M3

4. Foundation Construction sketch

Lenght : 4 m



4. Foundation Volume Calculation

$\frac{0.30 + 0.6}{2}$ x 0.70 x 6.0 = 1.9 m3

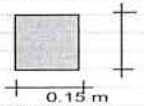
Need for Working Day People (WDP)

Worker	4	x	1.9	=	7.56	7.00 WDP
Mason	2	x	1.9	=	3.8	3.00 WDP

Need for Material

Stone	1.2	x	1.9	=	2.268	3.00 M3
Sand	0.8	x	1.9	=	1.512	1.00 <3
Cement	3.58	x	1.9	=	6.77	7.00 Sak

5. Concrete sloof sketch



lenght slof : 8 m

5. Concrete sloof volume calculation

0.15 x 0.20 x 6 = 0.18 m3

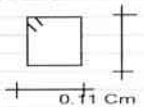
Need for Working Day People (WDP)

Worker	8	x	0.18	=	1.44	2.00 WDP
Mason	6	x	0.18	=	1.08	2.00 WDP

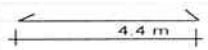
Need for Material

Split Stone :	0.94	x	0.18	=	0.17	1.00 m3
Sand	0.8	x	0.18	=	0.14	1.00 m3
Cement	8	x	0.18	=	1.44	2.00 Sak
Steel Bar 8 mm					10.17	11.00 Staf
steel bar 12 mm					1.76	2.00 Staf
Tie Wire					0.50	0.50 Kg
Board Grade III					5.00	5.00 piece
Nail					0.50	0.50 Kg

Lower sloof sketch
a. begel (steel bar : 8 mm)



Distance between begel = 0. 15 m
b. Principal reinforcement (steel bar "12 mm)



number of principal reinforcement = 4 piec

6.a Calculation of steel bar for begel and principal reinforcement

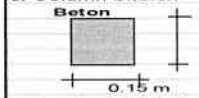
Sloof length	6 m		
distance between begel	0.15 m	= 15 Cm	
total begel needed	(4 m/0.15m)	40 piece	
Length of 1 Bugel (0.20 x2)+(0.20x2)+(0.05x2)			2.48 m
Length of I piece steel bar at market =		11 m	
Total need of steel bar for begel (8/0.15+1) X(0.9/11)X1.1=			#### Stf

Principal reinforcement

Length of 1 principal reinforcement	4.4 m		
number of principal reinforcement	4 btg		
Length of I piece steel bar at market =	11 m		
Total need of steel bar for principal reinfor =	(4.4 X 4 / 11)x1.1=		2 Stf

Sectional Images	Volume Calculation	Need for Material, tools and Working day people

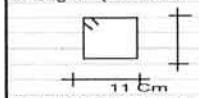
6. Column Sketch



total column : 4 piece

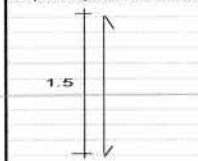
column Structure Sketch

a. begel (steel bar " 6 mm)



Begel distance = 0.15 m

b. principal reinforcement (steel bar "12 mm



number of principal reinforcement = 4 column

6. Column Structure Volume Calculation

= 0.15 x 0.15 x 1.50 x 4 = 0.14 m3

7.a Steel bar for begel and principal reinforcement calculation

Height of 1 Column Structure	=	1.5	m	
Number of Column Structure	=	4	bh	
distance between begel	=	0.15 m	=	15 cm
Total length of 1 column structu	=	(1,5m x 4)	=	6 m
Length of I piece steel bar at market	=		=	11 m
Length of 1 Begel (0.20 x2)+(0.20x2)+(0.05x2)			=	0.64 m

steel bar needed for begel (8.8/0.15+1)x(0.09/11)x1.1 = 2.624 Stf

Principal reinforcement

Length of 1 principal reinforcement	1.5	m
number of principal reinforcement	4	piece
Length of I piece steel bar at market =	11	m
Number of column structure =	4	piece

total steel bar needed for principal reinforc = (1,5X 4X4 / 11.9)x1.1= 2 Stf

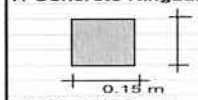
Need for Working Day People (WDP)

Worker	8	x	0.14	=	1.08	1.00 WDP
Mason	6	x	0.14	=	0.81	1.00 WDP

Need for material and tool

Split stone 2	0.94	x	0.14	=	0.13	1.00 m3
sand	0.8	x	0.14	=	0.11	1.00 m3
cement	8	x	0.14	=	1.08	1.00 Sak
Steel Bar 8 mm					2.62	3.00 Staf
Steel Bar 12 mm					2.40	2.00 Staf
Tie Wire					0.50	0.50 Kg
Board Grade II					6.00	6.00 piece
Nail					0.50	0.50 Kg

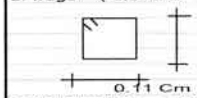
7. Concrete Ringbalk Sketch



sloof lenght: 8 m

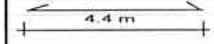
Lower sloof sketch

a. begel (steel bar " 6 mm)



begel distance = 0. 15 m

b. principal reinforcement (steel bar "12 mm)



Total principal reinforcement = 4 piece

7. Ringbalk Volume Calculation

* 0.15 x 0.15 x 6.0 = 0.14 m3

6.a Begel and principal reinforcement calculation

Begel 4 m

distance between begel	0.15 m	= 15 Cm		
total begel needed	(4m/0.15m)	26.67	piece	
length of 1 Begel (0.2 x2)+(0.2x2)+(0.05x2)		0.54	m	
Length of I piece steel bar at market =		11	m	

Total steel bar needed for Begel (4/0.15+1) X(0.9/11.9)X1.1= 1.49 Stf

Principal reinforcement

length of 1 principal reinforcement	4.4	m
number of principal reinforcement	4	piece
Length of I piece steel bar at market =	11	m

Total steel bar need forr principal reinforce = (4.4 X 4 / 11)x1.1= 2 Stf

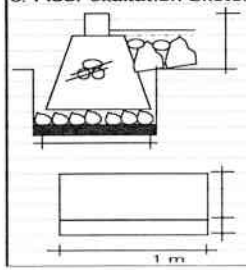
Need for Working Day People (WDP)

worker	8	x	0.14	=	1.1	2.0 WDP
mason	6	x	0.14	=	0.8	1.0 WDP

Need for material and tool

Split stone 2	0.94	x	0.14	=	0.13	1.0 m3
sand	0.8	x	0.14	=	0.11	1.0 m3
cemet	8	x	0.14	=	1.08	2.0 Sak
Steel bar 8 mm					1.49	1.00 Staf
Steel Bar12 mm					1.76	2.0 Staf
Tie Wire					0.50	0.50 Kg
Board Grade II					5.00	5.00 piece
Nail					0.50	0.50 Kg

8. Floor exaltation Sketch



8. Backfilling volume calculation

Total area for backfill : (1X 1) +(0.75X 1.5)	3.375	m2
Thick of backfill	0.3	m

Backfill Volume : (2x 2)+(0.75X2) x 0.3 = 1.0 m3

Need for Working Day People (WDP)

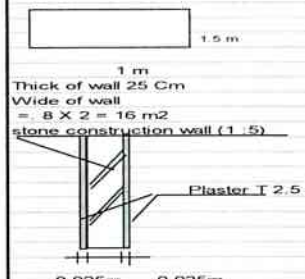
Worker	0.07	x	1.0	=	0.07	1.00 WDP

Need for material and tool

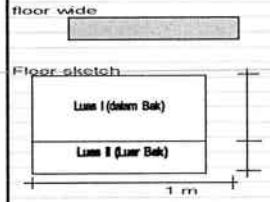
Stone	1.2	x	1.0	=	1.22	2.00 M3

Sectional Images

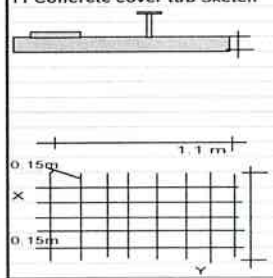
9. Wall and plaster sketch



10. Inside and Outside reservoar floor sketch



11 Concrete cover tub Sketch



Volume Calculation

9. Wall and plaster volume calculation

length of wall			6	m		
height of wall			1.5	m		
thick of wall			0.2	m		
Wide of wall		1m X 4 m X 1,5 =	9	m2		
volume of wall	=	(1.5 X 4 m) X 0.2	=		1.8	M3
Total Wide of Plaster						
length of plaster	=	6 X	2	=	12	m
heigh of plaster	=	1.5	m			
thick of plaster	=	0.025	m			
wide of plaster	=	(16 X 1,5) =	18	m2		

10. Inside and outside reservoal floor volume calculation

length of inside floor	=	1.5	m	
wide of inside floor	=	1.5	m	
thick of inside floor	=	0.15	m	
Total area of inside floor	=	1 X1 m =	2	m2
length of outside floor	=	1.5	m	
wide of outside floor	=	0.75	m	
thick of outside floor	=	0,15	m	
Total area of outside floor	1 X 0.75 m	=	1.1	m2
Total area floor (outside and inside) (A)=			3.4	m2
Total Floor Volume = (1.8 X 0.15 m)=			0.51	m3

11 Concrete cover tub volume calculation

=	0.15	x	1.5	x	1.5 =	0.338 m3

X & Y Direction steel bar				
length of 1 steel bar X direction =		1.8	m	
length of 1 steel bar Y direction =		1.8	m	
Distance between steel bar		0.15 m	=	15 Cm
Length of I piece steel bar at market =		11.0	m	
X direction				
(1.1/0.15+1)X(1.1/11.9)X1.1	=	2.34	Stf	
Y Direction				
(1.1/0.15+1)X(1.1/11.9)X1.1	=	2.34	Stf	
Total steel bar needed		4.68	Stf	

Need for Material, tools and Working day people

Need for Working Day People (WDP)

worker	6	x	9.0	=	54.00	54.00	WDP
Mason	4	x	9.0	=	36.00	36.00	WDP

Need for Material and tool

red brick	72	x	9.0	=	648	648.00	piece
sand	0.05	x	9.0	=	0.41	1.00	M3
cement	0.24	x	9.0	=	2.13	3.00	Sak

WDP Need for wall plaster

worker	0.29	X	18	=	5.22	5.00	WDP
Mason	0.3	X	18	=	5.40	6.00	WDP

Need for Material and tool

Sand	0.06	X	18	=	1.12	2.00	M3
Cement	0.24	X	18	=	4.27	5.00	Sak

Need for Working Day People (WDP)

Worker	6	x	0.51	=	3.0	4.00	WDP
Mason	8	x	0.51	=	4.1	4.00	WDP

Need for Material and tool

split stone 2	0.94	x	0.51	=	0.48	1.00	M3
sand	0.8	x	0.51	=	0.405	1.00	M3
cement	8	x	0.51	=	4.05	4.00	Sak

Need for Working Day People (WDP)

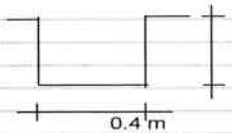
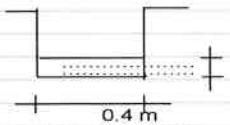
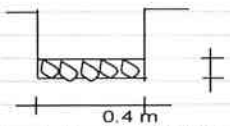
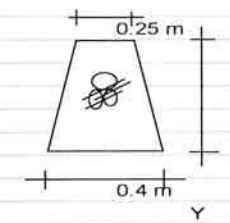
worker	8	x	0.34	=	2.7	2.7	WDP
mason	6	x	0.34	=	2.0	5	WDP

need for material and tool

sand	0.8	x	0.34	=	0.3	1	M3
split stone 2	0.94	x	0.34	=	0.3	1	M3
cement	8	x	0.34	=	2.7	7	Sak
steel bar 12 mm		=	6	Stf		6	Staf
tie wire		=	1	Kg		1	Kg
scaffold wood		=	25	Btg		25	piece
Nail (5 7 10 Cm)		=	5	Kg		5	Kg
Cast Board grade		=	10	piece		10	piece

TOTAL NEED FOR MATERIAL, TOOL AND WDP

A	Material for 1 public Hydrant		
1	Sand	=	4.4 m3
2	Stone	=	4.2 m3
3	Split stone 2/3	=	1.2 m3
4	Cement	=	23.5 Zak
5	steel bar 8 mm	=	14.3 Stf
6	Steel Bar 10 mm	=	10.2 Stf
7	Tie Wire	=	2.5 Kg
8	Nail (5,7,10 Cm)	=	6.5 Kg
9	Board Grade III (0.03 X 0.2 X 4 m)	=	8 piece
10	scaffold wood	=	25.0 piece
11	No Drop Paint	=	2 can
12	Red Brick	=	648 piece
	Pipe 1/2 diam	=	2 piece
	Sock 1/2 dim	=	3 piece
	Sock L 1/2 dim	=	3 piece
B	WAGES/WDP		
1	Worker	=	80.5 WDP
2	Mason	=	54.0 WDP

District : TTU Sub District : Bikomi Utara Village : Napan	**Take Of Sheet**	Type of Facility : Solar Panel Safety Fence Location : Desa Napan Volume : 1 Paket	**Sum Up**
Sectional Images	**Volume Calculation**	**Need for Material, tools and Working day peo**	
1. Foundation Sketch  Foundation Lenght 8 m	**1.Foundation Excavation Volume Calculation** = 0.4 x 0.3 x 28 = 3.4 m3	**Need for Working Day People (WDP)** ***Worker*** 1.1 x 3.4 = 3.70	3.00 WDP
2. Sand Dune Sketch  Foundation Lenght 8 m	**2. Sand Dune Volume Calculation** = 0.4 x 0.01 x 28 = 0.112 m3	**Need for Working day people** Worker 0.5 x 0.11 = 0.06 **Need for Material and tool** Sand 1.1 x 0.112 = 0.12	1.00 WDP 1.00 M3
3. Stone structure sketch  Foundation Lenght 11.5 m	**3. Stone Structure Calculation** = 0.4 x 0.10 x 28 = 1.12 m3	**Need for Working day people** Worker 1.5 x 1.12 = 1.68 **Need for Material and tool** Stone 1.2 x 1.12 = 1.34	2.00 WDP 2.00 M3
4. Foundation Construction Sketch Lenght : 4 m  	**4. Foundation Volume Calculation** $\frac{0.40 + 0.3}{2}$ x 0.60 x 28.0 = 5.5 m3	**Need for Working day people** Worker 4 x 5.5 = 21.84 Mason 2 x 5.5 = 10.9 **Need for Material and tool** Stone 1.2 x 5.5 = 6.552 Sand 0.8 x 5.5 = 4.368 Cement 3.58 x 5.5 = 19.55	21.00 WDP 10.00 WDP 7.00 M3 4.00 <3 20.00 Sak

TOTAL NEED FOR TOOLS, MATERIALS AND WORKING DAY PEOPLE

A	MATERIAL FOR 1 PUBLIC HYDRANT			
1	Sand	=	4.5	m3
2	Stone	=	7.9	m3
3	Kerikil 2/3	=		m3
4	Cement	=	19.5	Zak
B	WAGERS/WDP			
1	Worker	=	27.3	HOK
2	Mason	=	10.9	HOK

Annex 2

FORM FOR SUBMITTING SUPPLIER'S QUOTATION[14]

(This Form must be submitted only using the Supplier's Official Letterhead/Stationery[15])

We, the undersigned, hereby accept in full the UNDP General Terms and Conditions, and hereby offer to supply the items listed below in conformity with the specification and requirements of UNDP as per RFQ Reference No. _____:

TABLE 1 : Offer to Supply Goods Compliant with Technical Specifications and Requirements

SUMMARY		
NO.	**WORK DESCRIPTION**	**TOTAL BUDGET (IDR/USD)**
1	Drilling work	
2	Pipe Instalation work	
3	Solar Panel Instalation work	
4	Reservoar Development Work	
5	Public Hydrant work	
6	Solar panel safety fence work	
(A)	**Total Price of Works**	
	Add: Cost of Transportation	
	Add: Cost of Insurance	
	Add: Other Charges (please specify)	
	Total Final and All Inclusive Price Quotation	
in words		

NOTE: The detail price proposal as provided in excel sheet (Annex 2 – Form for Submitting Supplier Quotation should be attached as well to this form

[14] *This serves as a guide to the Supplier in preparing the quotation and price schedule.*
[15] *Official Letterhead/Stationery must indicate contact details – addresses, email, phone and fax numbers – for verification purposes*

TABLE 2 : Estimated Operating Costs (if applicable)

List of Consumable Item/s *(Include fast moving parts, if any)*	Estimated Average Consumption	Unit of Measure	Unit Price	Total Price per Item

TABLE 3 : Offer to Comply with Other Conditions and Related Requirements

Other Information pertaining to our Quotation are as follows :	Your Responses		
	Yes, we will comply	*No, we cannot comply*	*If you cannot comply, pls. indicate counter proposal*
Delivery Lead Time			
Estimated weight/volume/dimension of the Consignment:			
Country/ies Of Origin for the submersible and solar panel[16]:			
Warranty and After-Sales Requirements			
a) Training on Operations and Maintenance			
b) Minimum one (1) year warranty on both parts and labor			
c) Brand new replacement if Purchased Unit is beyond repair within warranty period			
d) Others			
Validity of Quotation 60 days			
All Provisions of the UNDP General Terms and Conditions			
Other requirements *[pls. specify]*			

All other information that we have not provided automatically implies our full compliance with the requirements, terms and conditions of the RFQ.

[16] *If the country of origin requires Export License for the goods being procured, or other relevant documents that the country of destination may require, the supplier must submit them to UNDP if awarded the PO/contract.*

[Name and Signature of the Supplier's Authorized Person]
[Designation]
[Date]

Annex 3

General Terms and Conditions

1. ACCEPTANCE OF THE PURCHASE ORDER

This Purchase Order may only be accepted by the Supplier's signing and returning an acknowledgement copy of it or by timely delivery of the goods in accordance with the terms of this Purchase Order, as herein specified. Acceptance of this Purchase Order shall effect a contract between the Parties under which the rights and obligations of the Parties shall be governed solely by the terms and conditions of this Purchase Order, including these General Conditions. No additional or inconsistent provisions proposed by the Supplier shall bind UNDP unless agreed to in writing by a duly authorized official of UNDP.

2. PAYMENT

2.1 UNDP shall, on fulfillment of the Delivery Terms, unless otherwise provided in this Purchase Order, make payment within 30 days of receipt of the Supplier's invoice for the goods and copies of the shipping documents specified in this Purchase Order.

2.2 Payment against the invoice referred to above will reflect any discount shown under the payment terms of this Purchase Order, provided payment is made within the period required by such payment terms.

2.3 Unless authorized by UNDP, the Supplier shall submit one invoice in respect of this Purchase Order, and such invoice must indicate the Purchase Order's identification number.

2.4 The prices shown in this Purchase Order may not be increased except by express written agreement of UNDP.

3. TAX EXEMPTION

3.1 Section 7 of the Convention on the Privileges and Immunities of the United Nations provides, inter alia, that the United Nations, including its subsidiary organs, is exempt from all direct taxes, except charges for utilities services, and is exempt from customs duties and charges of a similar nature in respect of articles imported or exported for its official use. In the event any governmental authority refuses to recognize UNDP's exemption from such taxes, duties or charges, the Supplier shall immediately consult with UNDP to determine a mutually acceptable procedure.

3.2 Accordingly, the Supplier authorizes UNDP to deduct from the Supplier's invoice any amount representing such taxes, duties or charges, unless the Supplier has consulted with UNDP before the payment thereof and UNDP has, in each instance, specifically authorized the Supplier to pay such taxes, duties or charges under protest. In that event, the Supplier shall provide UNDP with written evidence that payment of such taxes, duties or charges has been made and appropriately authorized.

4. RISK OF LOSS

Risk of loss, damage to or destruction of the goods shall be governed in accordance with Incoterms 2010, unless otherwise agreed upon by the Parties on the front side of this Purchase Order.

5. EXPORT LICENCES

Notwithstanding any INCOTERM 2010 used in this Purchase Order, the Supplier shall obtain any export licences required for the goods.

6. FITNESS OF GOODS/PACKAGING

The Supplier warrants that the goods, including packaging, conform to the specifications for the goods ordered under this Purchase Order and are fit for the purposes for which such goods are ordinarily used and for purposes

expressly made known to the Supplier by UNDP, and are free from defects in workmanship and materials. The Supplier also warrants that the goods are contained or packaged adequately to protect the goods.

7. INSPECTION

7.1 UNDP shall have a reasonable time after delivery of the goods to inspect them and to reject and refuse acceptance of goods not conforming to this Purchase Order; payment for goods pursuant to this Purchase Order shall not be deemed an acceptance of the goods.

7.2 Inspection prior to shipment does not relieve the Supplier from any of its contractual obligations.

8. INTELLECTUAL PROPERTY INFRINGEMENT

The Supplier warrants that the use or supply by UNDP of the goods sold under this Purchase Order does not infringe any patent, design, trade-name or trade-mark. In addition, the Supplier shall, pursuant to this warranty, indemnify, defend and hold UNDP and the United Nations harmless from any actions or claims brought against UNDP or the United Nations pertaining to the alleged infringement of a patent, design, trade-name or trade-mark arising in connection with the goods sold under this Purchase Order.

9. RIGHTS OF UNDP

In case of failure by the Supplier to fulfil its obligations under the terms and conditions of this Purchase Order, including but not limited to failure to obtain necessary export licences, or to make delivery of all or part of the goods by the agreed delivery date or dates, UNDP may, after giving the Supplier reasonable notice to perform and without prejudice to any other rights or remedies, exercise one or more of the following rights:

9.1 Procure all or part of the goods from other sources, in which event UNDP may hold the Supplier responsible for any excess cost occasioned thereby.
9.2 Refuse to accept delivery of all or part of the goods.
9.3 Cancel this Purchase Order without any liability for termination charges or any other liability of any kind of UNDP.

10. LATE DELIVERY

Without limiting any other rights or obligations of the parties hereunder, if the Supplier will be unable to deliver the goods by the delivery date(s) stipulated in this Purchase Order, the Supplier shall (i) immediately consult with UNDP to determine the most expeditious means for delivering the goods and (ii) use an expedited means of delivery, at the Supplier's cost (unless the delay is due to Force Majeure), if reasonably so requested by UNDP.

11. ASSIGNMENT AND INSOLVENCY

11.1. The Supplier shall not, except after obtaining the written consent of UNDP, assign, transfer, pledge or make other disposition of this Purchase Order, or any part thereof, or any of the Supplier's rights or obligations under this Purchase Order.
11.2. Should the Supplier become insolvent or should control of the Supplier change by virtue of insolvency, UNDP may, without prejudice to any other rights or remedies, immediately terminate this Purchase Order by giving the Supplier written notice of termination.

12. USE OF UNDP OR UNITED NATIONS NAME OR EMBLEM

The Supplier shall not use the name, emblem or official seal of UNDP or the United Nations for any purpose.

13. PROHIBITION ON ADVERTISING

The Supplier shall not advertise or otherwise make public that it is furnishing goods or services to UNDP without specific permission of UNDP in each instance.

14. CHILD LABOUR

The Supplier represents and warrants that neither it nor any of its affiliates is engaged in any practice inconsistent with the rights set forth in the Convention on the Rights of the Child, including Article 32 thereof, which, inter alia, requires that a child shall be protected from performing any work that is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral or social development.

Any breach of this representation and warranty shall entitle UNDP to terminate this Purchase Order immediately upon notice to the Supplier, without any liability for termination charges or any other liability of any kind of UNDP.

15. MINES

The Supplier represents and warrants that neither it nor any of its affiliates is actively and directly engaged in patent activities, development, assembly, production, trade or manufacture of mines or in such activities in respect of components primarily utilized in the manufacture of Mines. The term "Mines" means those devices defined in Article 2, Paragraphs 1, 4 and 5 of Protocol II annexed to the Convention on Prohibitions and Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects of 1980.

Any breach of this representation and warranty shall entitle UNDP to terminate this Purchase Order immediately upon notice to the Supplier, without any liability for termination charges or any other liability of any kind of UNDP.

16. SETTLEMENT OF DISPUTES

16.1 Amicable Settlement. The Parties shall use their best efforts to settle amicably any dispute, controversy or claim arising out of, or relating to this Purchase Order or the breach, termination or invalidity thereof. Where the Parties wish to seek such an amicable settlement through conciliation, the conciliation shall take place in accordance with the UNCITRAL Conciliation Rules then obtaining, or according to such other procedure as may be agreed between the Parties.

16.2 Arbitration. Unless, any such dispute, controversy or claim between the Parties arising out of or relating to this Purchase Order or the breach, termination or invalidity thereof is settled amicably under the preceding paragraph of this Section within sixty (60) days after receipt by one Party of the other Party's request for such amicable settlement, such dispute, controversy or claim shall be referred by either Party to arbitration in accordance with the UNCITRAL Arbitration Rules then obtaining, including its provisions on applicable law. The arbitral tribunal shall have no authority to award punitive damages. The Parties shall be bound by any arbitration award rendered as a result of such arbitration as the final adjudication of any such controversy, claim or dispute.

17. PRIVILEGES AND IMMUNITIES

Nothing in or related to these General Terms and Conditions or this Purchase Order shall be deemed a waiver of any of the privileges and immunities of the United Nations, including its subsidiary organs.

18. SEXUAL EXPLOITATION:

18.1 The Contractor shall take all appropriate measures to prevent sexual exploitation or abuse of anyone by it or by any of its employees or any other persons who may be engaged by the Contractor to perform any services under the Contract. For these purposes, sexual activity with any person less than eighteen years of age, regardless of any laws relating to consent, shall constitute the sexual exploitation and abuse of such person. In addition, the Contractor shall refrain from, and shall take all appropriate measures to prohibit its employees or other persons engaged by it from, exchanging any money, goods,

services, offers of employment or other things of value, for sexual favors or activities, or from engaging in any sexual activities that are exploitive or degrading to any person. The Contractor acknowledges and agrees that the provisions hereof constitute an essential term of the Contract and that any breach of this representation and warranty shall entitle UNDP to terminate the Contract immediately upon notice to the Contractor, without any liability for termination charges or any other liability of any kind.

18.2 UNDP shall not apply the foregoing standard relating to age in any case in which the Contractor's personnel or any other person who may be engaged by the Contractor to perform any services under the Contract is married to the person less than the age of eighteen years with whom sexual activity has occurred and in which such marriage is recognized as valid under the laws of the country of citizenship of such Contractor's personnel or such other person who may be engaged by the Contractor to perform any services under the Contract.

19.0 OFFICIALS NOT TO BENEFIT:

The Contractor warrants that no official of UNDP or the United Nations has received or will be offered by the Contractor any direct or indirect benefit arising from this Contract or the award thereof. The Contractor agrees that breach of this provision is a breach of an essential term of this Contract.

20. AUTHORITY TO MODIFY:

Pursuant to the Financial Regulations and Rules of UNDP, only the UNDP Authorized Official possess the authority to agree on behalf of UNDP to any modification of or change in this Agreement, to a waiver of any of its provisions or to any additional contractual relationship of any kind with the Contractor. Accordingly, no modification or change in this Contract shall be valid and enforceable against UNDP unless provided by an amendment to this Agreement signed by the Contractor and jointly by the UNDP Authorized Official.