The Saudi Program for Drilling of Wells and Rural Development in Africa - Phase V

Republic of the Sierra Leone

Project No: P5/2021/The Sierra Leone
Tender No: P5/2021/ The Sierra Leone/Contractor

Invitation to Tender
Construction
of

Construction of about (100) wells equipped with solar pumping systems and elevated tanks including extending of distribution network systems and public posts with taps.

Financed by a Grant from the Government of the Kingdom of Saudi Arabia through the Saudi Fund for Development (SFD)

Mohammed Osama Al-Kabbani / EDS INTERNATIONAL

Project Name:
The Saudi Program for Drilling of Wells and Rural Development in Africa, Phase V - THE SIERRA LEONE

Name of the Client:
Ministry of Water Resources – The Sierra Leone.

Financer:
Saudi Fund for Development

The Consultant
Mohammed Osama Al-Kabbani / EDS International

Duration
24 months

Objectives and components of the project:

The Project is The Construction of about (100) wells equipped with solar pumping systems and elevated tanks including extending of distribution network systems and public posts with taps). The project components falls within borehole drilling, procurement, installation of solar driven pumps with Water Pipe System, animation and sensitization and training. The primary objective of the project is to increase access to safe drinking water supply to about -- people in The Sierra Leone
The works include:

Construction of about (100) drilled-wells (water Boreholes) equipped with solar pumping system, Supply and installation of a 100 polyethylene tanks 10m³ and tower of 6m height with all necessary parts
Supply and installation of HDPE pipes in 77 water distribution Network System (100 km with a various piping diameters), concrete posts each Two taps and one meter
Animation/sensitization, which means beneficiaries contact with management and maintenance of the water system for awareness, during and after construction
Training of maintenance team and providing spare parts

Submission of Offers:
All contractors who are interested in participating to implement the project should submit their offers to the Saudi Fund for Development before 05/01/2025 at 14:00 in sealed envelopes including the technical and financial offers (hard and soft copies), to the following:

Office of the Deputy Chief Executive Officer
Main building, fourth (4) floor
Office No.427
Tel: (+966 11 2794495) (+966 11 279 4492)

We hope that you send an email to confirm if you wish to compete and submit your technical and financial offers to be able to respond to any inquiries or observations for the companies which are willing to apply, to the following emails:

- abh@sfd.gov.sa
- malshehri@sfd.gov.sa
- ceenoteb@yahoo.com
- berthe@eds-international.net
- mokeds2020@gmail.com
- eds.eds.ingenierie@gmail.com

Very important

The aforementioned sticker must be placed on the outer package and any package without the sticker will not be opened

العرض الفني والمالي لتنفيذ أعمال مشروع

البرنامج السعودي لحفر الآبار والتنمية الريفية في أفريقيا

(جمهورية سيراليون)

يسلم للإدارة العامة لعمليات أفريقيا
الصندوق السعودي للتنمية
الدور الرابع

عبدالله المطلق
مكتب رقم: ٤٤١
تلفون: ٩٦٦١١٢٧٩٤٤٥٤+

Technical and Financial offer for

the implementation of The Saudi Program for Well Drilling and Rural Development in Africa Project (Republic of The Sierra Leone)

Hands over to the General Directorate of Africa Operations
Saudi Fund for Development
4th Floor

Abdullah Al-Mutlaq
Office No: 441
Phone: +966-11-279-4454

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T = P x OD/2SD or 0.433 x SG x H x OD/2SD 112

Where: T = wall thickness, in 112

P = pressure, psi 112

SG = specific gravity, gm/cc 112

H = fluid head, ft 112

OD = outside diameter, ft 112

SD = hydrostatic design stress 112

2. On closed top tanks the top head shall be integrally molded with the cylindrical wall. Its minimum thickness shall be equal to the thickness of the top of the straight sidewall. In most cases, flat areas shall be provided for attachment of large fittings on the dome of the tank. 112

3. The bottom head shall be integrally molded with the cylindrical wall. Knuckle radius shall be: 112

Tank Diameter, ft 112

Min Knuckle Radius, in 112

less than or equal to 6 112

1 112

greater than 6 112

1-1/2 112

4. Tanks with 10,000-liter capacity or larger shall have at least 3 lifting lugs. Lugs shall be designed for lifting the tank when empty. 112

a. Unless otherwise indicated by Contract drawings, for indoor pneumatic fill, manways shall be 24-in diameter or greater and equipped with an emergency pressure relief device or SAFE-Surge™ Manway with pressure relief at 6" water column to prevent over-pressurization. The SAFE-Surge manway shall be chemically compatible with the chemical being stored. Gaskets shall be closed cell, cross-linked polyethylene foam, Viton, or EPDM materials. 112

b. Unless otherwise indicated by Contract drawings, for outdoor pneumatic fill, manways shall be 24-in diameter or greater and equipped with Poly Processing Company's F.S.2650® combined manway and vent to prevent over pressurization of tank. Manway must be capable of relieving a volume flow rate of up to 2650 ACFM. Gaskets shall be closed cell, cross-linked polyethylene foam, Viton, or EPDM materials 112

Venting Requirements For Polyethylene Tanks

Mechanical Pump Fill	**Pneumatic Fill**								
IF ≤ 1000 gallons	**IF** - Vent length ≤ 3 feet			**IF -** Vent length > 3' and ≤ 30'			**IF** - Scrubber Application		
Vent size should equal size of largest fill or discharge fitting	**AND - Vent** screen mesh size ≥ 1/4" or no screen used			**AND -** 3 or less 90° elbows with no other restrictions or reduction in pipe size			**Vent pipe size throughout scrubber system CANNOT be reduced!**		
							Centerline of dispersion pipe not to be submersed > 6 inches		
IF > 1000 gallons	**Emergency Pressure Relief Cover Required**			**Emergency Pressure Relief Cover Required**			Perforated dispersion pipe must be same diameter or larger, as vent. Sum of perforations ≥ cross sectional area of pipe		
Vent size should exceed the largest fill or discharge fitting by 1 inch	Tanker Discharge	Inlet/Fitting Size	Minimum Vent Size	Tanker Discharge	Inlet/Fitting Size	Minimum Vent Size	Tanker Discharge	Inlet/Fitting Size	Minimum Vent Size
	2"	2"	4"	2"	2"	6"	2"	2"	6"
	3"	2"	6"	3"	2"	6"	3"	2"	8"
	3"	3"	6"	3"	3"	8"	3"	3"	10"

(2) 2 inch vents **DO NOT EQUAL** 4 inch venting capacity rev. Nov 2006

For detailed venting guidelines, please visit our Technical Resources at www.polyprocessing.com

SECTION 1

INVITATION TO BIDDERS

KINGDOM OF SAUDI ARABIA
The Saudi Fund For Development
THE SAUDI PROGRAM FOR DRILLING OF WELLS AND RURAL DEVELOPMENT IN AFRICA

المملكة العربية السعودية
الصندوق السعودي للتنمية
البرنامج السعودي لحفر الآبار والتنمية الريفية في أفريقيا

Date: 04/11/2024

The Saudi Program for Drilling of Wells and Rural Development in Africa - Phase V

Tender Documents for Construction - The Sierra Leone
Project No. P5/2021/The Sierra Leone Tender No. P5/2021/ The Sierra Leone /Contractor

Dear Sir,

We are pleased to herewith forward to you the Tender Documents for Construction of about (100) wells equipped with solar pumping systems and elevated tanks including extending of distribution network systems and public posts with taps. Of the Saudi Program for Drilling of Wells and Rural Development in Africa, phase V in Sierra Leone.

The offers must be submitted no later than 05/01/2025 at 14:00KSA time.

Please be aware that the evaluation of your offer will follow the selection criteria laid out in Section 6, (Forms of Bids and Contract). Each tenderer must submit a separate offer.

For details on the actual situation in the different project region as access, location and hydrogeological situation of the well sites as well as for the standard design of the wells and water supply systems each tenderer has to visit the project area and to contact the local authorities (Water department) in Sierra Leone.

We are looking forward to receiving your Tender.

Yours sincerely

SECTION 2

GENERAL INFORMATION

Section -2: General Information – The Republic of The Sierra Leone

The Sierra Leone officially the Republic of The Sierra Leone is a coastal country in West Africa. It borders the Atlantic Ocean to the west, The Sierra LeoneBissau to the northwest, Senegal to the north, Mali to the northeast, Cote d'Ivoire to the southeast, and Sierra Leone and Liberia to the south. It is sometimes referred to as The Sierra LeoneConakry after its capital Conakry, to distinguish it from other territories in the eponymous region such as The Sierra Leone-Bissau and Equatorial The Sierra Leone. It has a population of 13.5 million and an area of 245,857 square kilometres. Muslims represent 85% of the population. The country is divided into four geographic regions: Maritime The Sierra Leone on the Atlantic coast, the Fouta Djallon or Middle The Sierra Leone highlands, the Upper The Sierra Leone savanna region in the northeast, and the Guinée forestière region of tropical forests. French, the official language of The Sierra Leone, is a language of communication in schools, in government administration, and the media. More than 24 indigenous languages are spoken and the largest are Susu, Pular, and Maninka, which dominate respectively in Maritime The Sierra Leone, Fouta Djallon, and Upper The Sierra Leone, while Guinée forestière is ethnolinguistically diverse. The Sierra Leone's economy is mostly dependent on agriculture and mineral production. It is the world's second largest producer of bauxite, and has deposits of diamonds and gold. The country was at the core of the 2014 Ebola outbreak. Geography The Sierra Leone shares a border with The Sierra Leone-Bissau to the northwest, Senegal to the north, Mali to the northeast, Ivory Coast to the east, Sierra Leone to the southwest and Liberia to the south. The nation forms a crescent as it curves from its southeast region to the north and west, to its northwest border with The Sierra Leone-Bissau and southwestern coast on the Atlantic Ocean. The sources of the Niger River, the Gambia River, and the Senegal River are all found in the The Sierra Leone Highlands. At 245,857 km2 (94,926 sq mi), The Sierra Leone is roughly the size of the United Kingdom. There are 320 km (200 mi) of coastline and a total land border of 3,400 km (2,100 mi). It lies mostly between latitudes 7° and 13°N, and longitudes 7° and 15°W, with a smaller area that is west of 15°. The Sierra Leone is divided into 4 regions: Maritime The Sierra Leone, also known as Lower The Sierra Leone or the Basse-Coté lowlands, populated mainly by the Susu ethnic group; the cooler, more mountainous Fouta Djallon that run roughly north–south through the middle of the country, populated by Fulas; the Sahelian Haute-The Sierra Leone to the northeast, populated by Malinké; and the forested jungle regions in the southeast, with several ethnic groups. The Sierra Leone's mountains are the source for the Niger, the Gambia, and Senegal Rivers, and rivers flowing to the sea on the west side of the range in Sierra Leone and Ivory Coast. The highest point in The Sierra Leone is Mount 11 Nimba at 1,752 m (5,748 ft). While the The Sierra Leonen and Ivorian sides of the Nimba Massif are a UNESCO Strict Nature Reserve, the portion of the so-called The Sierra Leonen Backbone continues into Liberia, where it has been mined for decades; the damage is evident in the Nzérékoré Region at 7°32′17″N 8°29′50″W. The Sierra Leone is home to 5

ecoregions: The Sierra Leonen montane forests, Western The Sierra Leonen lowland forests, The Sierra Leonen forestsavanna mosaic, West Sudanian savanna, and The Sierra Leonen mangroves. It had a 2019 Forest Landscape Integrity Index mean score of 4.9/10, ranking it 114th globally out of 172 countries. Regions and prefectures The Republic of The Sierra Leone covers 245,857 square kilometres (94,926 sq mi) of West Africa, about 10 degrees north of the equator. It is divided into 4 natural regions with distinct human, geographic, and climatic characteristics: Maritime The Sierra Leone (La Guinée Maritime) covers 18% of the country. Middle The Sierra Leone (La Moyenne-Guinée) covers 20% of the country. Upper The Sierra Leone (La Haute-Guinée) covers 38% of the country. Forested The Sierra Leone (Guinée forestière) covers 23% of the country, and is both forested and mountainous. The Sierra Leone is divided into 8 administrative regions which are subdivided into 33 prefectures. The capital Conakry with a population of 1,675,069 ranks as a special zone. Economy Agriculture The agriculture sector at some point employed approximately 75% of the country. The rice is cultivated in the flooded zones between streams and rivers. The local production of rice is not sufficient to feed the country, so rice is imported from Asia. The sector cultivates coffee beans, pineapples, peaches, nectarines, mangoes, oranges, bananas, potatoes, tomatoes, cucumbers, pepper, and other types of produce. The Sierra Leone is one of the emerging regional producers of apples and pears. There are plantations of grapes, pomegranates, and more recent years have seen the development of strawberry plantations, based on the vertical hydroponic system. Natural resources The Sierra Leone has 25% or more of the world's known bauxite reserves. It has diamonds, gold, and other metals. Bauxite and alumina are the most major exports. Other industries include processing plants for beer, juices, soft drinks and tobacco. Agriculture employs 75% of the nation's labour force. Under French rule, and at the beginning of independence, The Sierra Leone was an exporter of bananas, pineapples, coffee, peanuts, and palm oil. Soil, water, and climatic conditions provide opportunities for irrigated farming and agro industry. Mining The Sierra Leone possesses over 25 billion tonnes (metric tons) of bauxite – and perhaps up to one half of the world's reserves. Its mineral wealth includes more than 4-billion tonnes of high-grade iron ore, and diamond and gold deposits, and uranium. Possibilities for investment and commercial activities exist in all these areas, and The Sierra Leone's "poorly developed infrastructure and rampant corruption continue to present obstacles to large-scale investment projects". Joint venture bauxite mining and alumina operations in north-west The Sierra Leone historically provide about 80% of The Sierra Leone's Foreign exchange reserves. Bauxite is refined into alumina, which is later smelted into aluminium. 12 The Compagnie des Bauxites de Guinée (CBG) exports about 14 million tonnes of high-grade bauxite annually. CBG is a joint venture, 49% owned by the The Sierra Leonen government and 51% by an international consortium known as Halco Mining Inc., itself a joint venture controlled by aluminium producer Alcoa (AA), global miner Rio Tinto Group and Dadco Investments. CBG has exclusive rights to bauxite reserves and resources in north-western The Sierra Leone, through 2038. In 2008, protesters upset about poor electrical services blocked the tracks CBG uses. The Sierra Leone includes a proviso in its agreements with international oil companies, requiring its partners to generate power for nearby communities. The Compagnie des Bauxites de Kindia (CBK), a joint venture between the government of The Sierra Leone and RUSAL, produces some 2.5 million tonnes annually, nearly all of which is exported to Russia and Eastern Europe. Dian Dian, a The Sierra Leonen/Ukrainian joint bauxite venture, has a projected production rate of 1,000,000 t (1,102,311 short tons; 984,207 long tons) per year, and is not expected to begin operation for several years. The Alumina Compagnie de Guinée (ACG) which took over the former Friguia Consortium produced about 2.4 million tonnes in 2004, as raw material for its alumina refinery. The refinery exports about 750,000 tonnes of alumina. Both Global Alumina and Alcoa-Alcan have signed conventions with the government of The Sierra Leone to build large alumina refineries, with a combined capacity of about 4 million tonnes per year. The Simandou mine is an iron ore reserve. In March 2010, Anglo-Australian corporation Rio Tinto Group and its biggest shareholder, Aluminum Corporation of China Limited (Chinalco), signed a preliminary agreement to develop Rio Tinto's iron ore project.[93] In 2017, the Serious Fraud Office (SFO), Britain's

antifraud regulator, launched an official investigation into Rio Tinto's business and mining practices in The Sierra Leone. Tigui Camara, a former model, is the first woman in The Sierra Leone to own a mining company which is partially run as a social enterprise. Oil In 2006, The Sierra Leone signed a production sharing agreement with Hyperdynamics Corporation of Houston to explore an offshore tract, and was then in partnership with Dana Petroleum PLC (Aberdeen, United Kingdom). The initial well, the Sabu-1, was scheduled to begin drilling in October 2011, at a site in approximately 700 metres of water. The Sabu-1 targeted a 4-way anticline prospect with upper Cretaceous sands, and was anticipated to be drilled to a total depth of 3,600 meters. Following the completion of exploratory drilling in 2012, the Sabu-1 well was not deemed commercially viable.[97] In November 2012, Hyperdynamics subsidiary SCS reached an agreement for a sale of 40% of the concession to Tullow Oil, bringing ownership shares in the The Sierra Leone offshore tract to 37% Hyperdynamics, 40% Tullow Oil, and 23% Dana Petroleum. Hyperdynamics will have until September 2016, under the current agreement, to begin drilling its next selected site, the Fatala Cenomanian turbidite fan prospect.

SECTION 3

INSTRUCTIONS TO BIDDERS

Section 3: Instructions to Bidders

A. General

1. Scope of Bid	1.1	The Employer as defined in the Contract Data, invites bids for the construction of Works, as described in the Contract Data. The name and identification number of the Contract is provided in the Bidding Data and Contract Data.
	1.2	The successful Bidder will be expected to complete the Works by the Intended Completion Date specified in the Contract Data.
2. Source of Funds	2.1	The Beneficiary, as defined in the Contract Data, intends to apply the funds of the Employer financing, as defined in the Bidding Data, towards the cost of the Project, as defined in the Bidding Data, to cover eligible payments under the Contract for the Works. Payments by the Employer will be made only at the request of the Consulting Engineer as defined in the Bidding Data and Contract Data and upon approval by the Employer in accordance with the Financing Agreement, and will be subject in all respects to the terms and conditions of that Agreement. Except as the Employer may specifically otherwise agree, no party other than the Beneficiary shall derive any rights from the Financing agreement or have any rights to the financing proceeds.
	2.2	The Financing Agreement prohibits a withdrawal from the funds of the Employer financing for the purpose of any payment to persons or entities, or for any import of goods, if such payment or import, to the knowledge of the Employer, is prohibited by a Employer's eligibility rules.
3. Eligible Bidders	3.1	This Invitation for Bids is open to international Contractors, which has relevant experience in water well drilling in Sub Saharan Africa. It is preferable that the Company or the JV has relevance experience in undertaking SFD supported programs for water wells drilling in rural Africa and specifically to the region (please refer to the evaluation criteria).
	3.2	All bidders shall provide their bid in the form in section 6.
	3.3	Bidders shall not be under a declaration of ineligibility for corruption and fraudulent practices issued by the SFD in accordance with sub-clause 35.1, herewith after.
4. Qualification of the Bidder	4.1	All bidders shall provide as in Section 6, Qualification Information, a preliminary description of the proposed work method and schedule, including drawings and charts, as necessary as stipulated in form in Section 6.
	4.2	In the event that prequalification of potential bidders has been undertaken, only bids from prequalified bidders will be considered for award of Contract. These qualified bidders should submit with their bids any information updating their original prequalification applications or, alternatively, confirm in their bids that the originally submitted prequalification information remains essentially correct as of the date of bid submission.

	4.3	If the Employer has not undertaken prequalification of potential bidders, all bidders shall include the following information and documents with their bids in Section 6, unless otherwise stated in the Bidding Data: (a) copies of original documents defining the constitution or legal status, place of registration, and principal place of business written power of attorney of the signatory of the Bid to commit the Bidder; (b) total monetary value of construction work performed for each of the last five years; (c) experience in works of a similar nature and size for each of the last five years, and details of work under way or contractually committed and clients who may be contacted for further information on those contracts; (d) major items of construction equipment proposed to carry out the Contract; (e) qualifications and experience of key site management technical personnel proposed for the Contract; (f) reports on the financial standing of the Bidder, such as profit and loss statements and auditor's reports for the past five years: (g) evidence of adequacy of working capital for this Contract (access to 1ine(s) of credit and availability of other financial resources); (h) authority to seek references from the Bidder's bankers; (i) information regarding any litigation, current or during the last five years, in which the Bidder is involved, the parties concerned, and disputed amount. (j) proposals for subcontracting components of the Works amounting to more than 10 percent of the Contract Price.
	4.4	Bids submitted by a joint venture of two or more firms as partners shall comply with the following requirements, unless otherwise stated in the Contract Data: (a) the Bid shall include all the information listed in Sub-Clause 4.3 above for each joint venture partner: (b) the Bid shall be signed so as to be legally binding on all partners. (c) all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms.

		(d) one of the partners will be nominated as being in charge, authorized to incur liabilities, and receive instructions for and on behalf of any and all partners of the joint venture and (e) the execution of the entire Contract, including payment, shall be done exclusively with the partner in charge.
	4.5	To qualify for award of the Contract, bidders shall meet the following minimum qualifying criteria: (a) annual volume of construction work of at least $ 2,000,000 (b) experience as prime contractor in the construction of at least two works of a nature and complexity equivalent to the Works over the last 10 years (to comply with this requirement, works cited should be at least 70 percent complete); (c) proposals for the timely acquisition (own, tease, hire, etc.) of the essential equipment listed in the Bidding Data; (d) a Contract Manager with five years' experience in works of an equivalent nature and volume, including no less than three years as Manager: and
	4.6	A consistent history of litigation or arbitration awards against the Applicant or any partner of a Joint Venture may result in disqualification. The figures for each of the partners of a joint venture shall be added together to determine the Bidder's compliance with the minimum qualifying criteria of Sub-Clause 4.5(a); however, for a Joint venture to qualify, each of its partners must meet at least 25 percent of minimum criteria 4.5(a), and (b) for an individual Bidder, and the partner in charge at least 40 percent of those minimum criteria. Failure to comply with this requirement will result in rejection of the joint venture's Bid. Subcontractors ' experience and resources will not be taken into account in determining the Bidder's compliance with the qualifying criteria.

5. One Bid per Bidder	5.1	Each Bidder shall submit only one Bid, either individually or as a partner in a joint venture. A Bidder who submits or participates in more than one Bid (other than as a subcontractor or in cases of alternatives that have been permitted or requested) will cause all the proposals with the Bidder's participation to be disqualified.
6. Cost of Bidding	6.1	The Bidder shall bear all costs associated with the preparation and submission of his Bid, and the Employer will in no case be responsible or liable for those costs.
7. Site Visit	7.1	Considering the COVID 19 pandemics, the site visit is not compulsory and left to the discretion of the bidders. However If the bidder still would like to visit the sites in order to obtain complementary information for preparing the bid, it is recommended to liaise with the coordinator of the program Ing. Yankuba Jusu Tarawally, on email: ceenoteb@yahoo.com, phone: +232 76 709912 If you wish to visit the site, contact Mr. Yankuba Jusu Tarawally

B. Bidding Document		
8. Content of Bidding Documents	8.1	The set of bidding documents comprises the documents listed in the table below and addenda issued in accordance with Clause 10: Section 3 Instructions to Bidders Section 4 Conditions of Contract Section 5 Contract Data Section 6 Forms of Bid and Contract Section 7 Specifications Section 8 Drawings, Technical Data sheet and Sketches Section 9 Bill of Quantities
	8.2	Three copies of Sections 4, 6, and 9 are supplied to the prospective Bidder. 3 copies to be completed and returned with the Bid.
9. Clarification of Bidding Documents	9.1	A prospective Bidder requiring any clarification of the bidding documents may notify the Employer by Email to the followings Email addresses: - abh@sfd.gov.sa - malshehri@sfd.gov.sa - ceenoteb@yahoo.com - berthe@eds-international.net - mokeds2020@gmail.com - eds.eds.ingenierie@gmail.com The Employer will respond to any request for clarification received earlier than 15 days prior to the deadline for submission of bids. The Employer's response and addendums will be posted in the SFD website, but without identifying its source.
10. Amendment of Bidding Documents	10.1	Before the deadline for submission of bids, the Employer may modify the bidding documents by issuing addenda.
	10.2	Any addendum thus issued shall be part of the bidding documents will be posted in the SFD website,
	10.3	To give prospective bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer shall extend, as necessary, the deadline for submission of bids, in accordance with Sub-Clause 20.2 below.

C. Preparation of Bids

11. Language of Bid	11.1	All documents relating to the Bid shall be in the English language.
12. Documents Comprising the Bid	12.1	The Bid submitted by the Bidder shall comprise the following: (a) The Bid (in the form in Section 6) (b) Bid Security in the forms in Section 6 (c) Priced Bill of Quantities (Section 9) (d) Qualification Information Form and Documents (form in Section 6) (e) Alternative offers if any
13. Bid Prices	13.1	The Contract shall be for the whole Works as described in Sub- Clause 1.1, based on the priced Bill of Quantities submitted by the Bidder.
	13.2	The Bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items for which no rate or price entered by the Bidder will not be paid for by the Employer when executed and shall be deemed covered by the other rates and prices in the Bill of Quantities.
14. Currencies of Bid and Payment	14.1	The unit rates and prices shall be quoted by the Bidder entirely in American dollars. Payment will be in American dollars.
15. Bid Validity	15.1	Bids shall remain valid for a period of 180 days after the dead line for the Bid submission specified in the tender document.
	15.2	In exceptional circumstances, the Employer may request that the bidders extend the period of validity for a specified additional period. The request and the bidders' responses shall be made in writing or by cable. A Bidder agreeing to the request will not be required or permitted to otherwise modify the Bid, but will be required to extend the validity of Bid Security for the period of the extension, and in compliance with Clause 16 in all respects.

16. Bid Security	16.1	The Bidder shall furnish, as part of the Bid, a Bid Security in American dollars (2 to 5%) of the financial offer amount.
	16.2	The Bid Security shall, at the Bidder's option, be in the form of a certified check, letter of credit, bank guarantee from a banking institution, or a bond issued by an insurance or bonding institution from a reputable institution selected by the Bidder and located in any eligible country. The format of the Bid Security should be in accordance with one of the forms of Bid Security included in Section 6 or another form acceptable to the Employer. Bid Security shall be valid for 28 days beyond the validity of the Bid.
	16.3	Any bid not accompanied by an acceptable Bid Security shall be rejected by the Employer. The Bid Security of a joint venture must define as "bidder" all joint venture partners and list them in the following manner: a joint venture consisting of "----------" And "----------"
	16.4	The Bid Security of unsuccessful bidders will be returned within 28 days of the end of the Bid validity period specified in Sub- Clause 15.1 above.
	16.5	The Bid Security of the successful Bidder will be discharged when the Bidder has signed the Agreement and furnished the required Performance Security.
	16.6	The Bid Security may be forfeited: (a) if the Bidder withdraws the Bid after Bid opening during the period of Bid validity; (b) if the Bidder does not accept the correction of the Bid price, pursuant to Clause 27: or (c) in the case of a successful Bidder, if the Bidder fails within the specified time limit to (i) sign the Agreement or (ii) furnish the required Performance Security.
17. Alternative Proposals by Bidders	17.1	Bidders shall submit offers that comply with the requirements of the bidding documents, including the basic technical design as indicated in the drawings and specifications. Alternatives will not be considered.
18. Format and Signing of Bid	18.1	The Bidder shall prepare one original of the documents comprising the Bid as described in Clause 12 of these Instructions to Bidders, bound with the volume containing the Form of Bid, and clearly marked

		"ORIGINAL." in addition, the Bidder shall submit copies of the Bid and clearly marked as "COPIES." in the event of discrepancy between them, the original shall prevail.
	18.2	The original and all copies of the Bid shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the Bidder, pursuant to Sub- Clauses 4.3(a) or 4.4(b), as the case may be. All pages of the Bid where entries or amendments have been made shall be initiated by the person or persons signing the Bid.
	18.3	The Bid shall contain no alterations or additions, except those to comply with instructions issued by the Employer, or as necessary to correct errors made by the Bidder, in which case such corrections shall be initiated by the person or persons signing the Bid.

D. Submission of Bids

19. Sealing marking and presentation of Bids	19.1	The Bidder shall seal the original and all copies of the Bid in two inner envelopes and one outer envelope, duly marking the inner envelopes as "ORIGINAL" and "COPIES'".
	19.2	The inner and outer envelopes shall: (a) be addressed to the Employer at the address provided in the Bidding Data. (b) bear the name and identification number of the Contract as defined in the Contract Data; and (c) Provide a warning not to open before the specified time and date for Bid opening as defined in the Bidding Data.
	19.3	In addition to the identification required in Sub-Clause 19.2, the inner envelopes shall indicate the name and address of the Bidder to enable the Bid to be returned unopened in case it is declared late, pursuant to Clause 21.
	19.4	If the outer envelope is not sealed and marked as above, the Employer will assume no responsibility for the misplacement or premature opening of the Bid.
	19.5	Each Original and Copy Envelop will contain the followings: **Technical file:** (1) Power of Attorney to sign the Proposal (2) Letter of Bid (3) The Bid Security (please refer to form in section 6) (4) **TECH-1**: • The Technical Submission Form (please refer to section 6), • If the Proposal is submitted by a joint venture, attach a letter of intent or a copy of an existing agreement. • No pre-set format/form. In the case of a Joint Venture, several are required: a power of attorney for the authorized representative of each JV member, and a power of attorney for the representative of the lead member to represent all JV members (5) **TECH-2** : • Contractor Statutory Documents • Contractor's Organization • Contractor's **relevant** experience: 1. Water supply (number and Km) and well construction (number of wells and depth) 2. Surface Construction, 3. Experience in Sub-Saharan Africa 4. Experience with the SFD. (6) **TECH-3** : • Contractor's Organization for implementing the works (Please include the organization Chart showing the relationship between the Project Management Staff (senior

staff and support staff from the HQ), the Key Field Staff and the subcontractors.

- The CVs of the Key Field Staff in English and highlighting the relevant experience (please refer to section 6 Qualification information):
  1. Project Manager (Engineer),
  2. Civil Engineer,
  3. Hydrogeologist/Geophysicist Engineer,
  4. Hydraulic Engineer,
  5. Surveyor Engineer,
  6. Solar system expert (Engineer)
  7. Animation Expert (Social Expert speaking local languages and French).
- The list of the non key staff :name, position and year of relevant experience (Survey team (at least 3 persons), one Auto CAD operator, two Drillers, two Assistant drillers, five Skilled labourers (masons, electricians and mechanics), five car drivers, one crane driver).

(7) **TECH-4**: Description of the Approach, Methodology for Performing the works:

- Overall Concept including some typical drawings,
- Drilling Concept, Digging methods
- Water Supply network, tanks, solar pump
- Surface Constructions
- Construction Materials (quality)
- Pumping and Testing Equipment
- Animation concept and staffing
- Maintenance, Spare Parts list to be provided in the framework of the project.

(8) **TECH-5:** Equipment to be used for the work implementation (please refer to section 3 for the minimum requirement equipment). Please provide details (capacity and age).

(9) **TECH-6** : Work Schedule

AND

Sealed Envelope with the Financial Proposal:

(1) Priced Bill of Quantity,

The cost breakdown of each unit price (Material, Labour, Equipment, Overhead, Profit)

20. Deadline for Sub-mission of Bids	20.1	Bids shall be delivered to the Employer at the address specified in the Bidding Data later than the time and date specified in the Bidding Data.
	20.2	The Employer may extend the deadline for submission of bids by issuing an amendment in accordance with Clause 10, in which case all rights and obligations of the Employer and the bidders previously subject to the original deadline will then be subject to the new deadline.
21. Late Bids	21.1	Any Bid received by the Employer after the deadline prescribed in Clause 20 will be returned unopened to the Bidder.
22. Modification And Withdrawal of Bids	22.1	Bidders may modify or withdraw their bids by giving notice in writing before the deadline prescribed in Clause 20.
	22.2	Each Bidder's modification or withdrawal notice shall be prepared, sealed, marked, and delivered in accordance with Clauses 18 and 19, with the outer and inner envelopes additionally marked "MODIFICATION" or "WITHDRAWAL," as appropriate.
	22.3	No Bid may be modified after the deadline for submission of Bids.
	22.4	Withdrawal of a Bid between the deadline for submission of bids and the expiration of the period of Bid validity specified in clause 15.1 above or as extended pursuant to Sub-Clause 15.2 may result in the forfeiture of the Bid Security pursuant to Clause 16.
	22.5	Bidders may only offer discounts to, or otherwise modify the prices of their bids by submitting Bid modifications in accordance with this clause, or included in the original Bid submission.

E. Bid Opening and Evaluation

23. Bid Opening	23.1	The Employer will open the bids, including modifications made pursuant to Clause 22, in the presence of the bidders' representatives who choose to attend at the time and in the place specified in the Bidding Data.
	23.2	Bids for which an acceptable notice of withdrawal has been submitted pursuant to Clause 22 shall not be opened.
	23.3	The bidders' names, the Bid prices, the total amount of each Bid and of any alternative Bid (if alternatives have been requested or permitted), any discounts, Bid modifications and withdrawals, the presence or absence of Bid Security, and such other details as the Employer may consider appropriate, will be announced by the Employer at the opening.
	23.4	The Employer will prepare minutes of the Bid opening, including the information disclosed to those present in accordance with Sub-Clause 23.3
24. Process to Be Confidential	24.1	Information relating to the examination, clarification, evaluation, and comparison of bids and recommendations for the award of a contract shall not be disclosed to bidders or any other persons not officially concerned with such process until the award to the successful Bidder has been announced. Any effort by a Bidder to influence the Employer's processing of bids or award decisions may result in the rejection of his Bid.
25. Clarification of Bids and Contacting the Employer	25.1	From the time of bid opening to the time of contract award, if any bidder wishes to contact the Employer on any matter related to the bid, it should do so in writing.
	25.2	To assist in the examination, evaluation, and comparison of bids, the Employer may, at the Employer's discretion, ask any Bidder for clarification of the Bidder's Bid, including breakdowns of unit rates The request for clarification and the response shall be in writing or by cable but no change in the price or substance of the Bid shall be sought, offered, or permitted except as required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the bids in accordance with Clause 27.
	25.3	Any effort by the Bidder to influence the Employer in the Employer's bid evaluation, bid comparison or contract award decisions may result in the rejection of the Bidders' bid.

26. Examination of Bids and Determination Of Responsiveness	26.1	Prior to the detailed evaluation of bids, the Employer will determine whether each Bid (a) meets the eligibility criteria defined in Clause 3; (b) has been properly signed; (c) is accompanied by the required securities; and (d) is substantially responsive to the requirements of the bidding documents.
	26.2	A substantially responsive Bid is one which conforms to all the terms, conditions, and specifications of the bidding documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the Works; (b) which limits in any substantial way, inconsistent with the bidding documents, the Employer's rights or the Bidder's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other bidders presenting substantially responsive bids.
	26.3	All bids will be subject to a technical evaluation according to technical evaluation sheet in form in section 6. Only bids attaining ≥ 70% will be accepted to enter the competition and will be considered to be responsive.
	26.4	If a Bid is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation.
27. Correction of Errors	27.1	Bids determined to be substantially responsive will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as follows: (a) where there is a discrepancy between the amounts in figures and in words, the amount in words will govern; and (b) where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern, unless in the opinion of the Employer there is an obviously gross misplacement of the decimal point in the unit rate, in which case the line item total as quoted will govern, and the unit rate will be corrected.
	27.2	The amount stated in the Bid will be adjusted by the Employer in accordance with the above procedure for the correction of errors and, with the concurrence of the Bidder, shall be considered as binding upon the Bidder. If the Bidder does not accept the corrected amount, the Bid will be rejected, and the Bid Security may be forfeited in accordance with Sub-Clause I 6.6(b).
28. Currency for Bid Evaluation	28.1	Bids will be evaluated as specified in clause 14.1

29. Evaluation and Comparison of Bids	29.1	The Employer will evaluate and compare only the bids determined to be substantially responsive in accordance with Clause 26.
	29.2	In evaluating the bids, the Employer will determine for each Bid the evaluated Bid price by adjusting the Bid price as follows: (a) making any correction for errors pursuant to Clause 27; (b) excluding provisional sums and the provision, if any, for contingencies in the Bill of Quantities, but including Day work, where priced competitively; (c) making an appropriate adjustment for any other acceptable variations, deviations, or alternative offers submitted in accordance with Clause 17; and (d) Making appropriate adjustments to reflect discounts or other price modifications offered in accordance with Sub- Clause 22.5
	29.3	The Employer reserves the right to accept or reject any variation, deviation, or alternative offer. Variations, deviations, and alternative offers and other factors which are in excess of the requirements of the bidding documents or otherwise result in unsolicited benefits for the Employer will not be taken into account in Bid evaluation.
	29.4	The estimated effect of any price adjustment conditions under Clause 47 of the Conditions of Contract, during the period of implementation of the Contract, will not be taken into account in Bid evaluation.

F. Award of Contract		
30. Award Criteria	30.1	Subject to Clause 31, the Employer will award the Contract to the Bidder whose Bid has been determined to be substantially responsive to the bidding documents and who has offered the lowest evaluated Bid price, provided that such Bidder has been determined to be: (a) eligible in accordance with the provisions of Clause 3, and (b) qualified in accordance with the provisions of Clause 4.
31. Employer's Right to Accept any Bid and to Reject any or all Bids	31.1	Notwithstanding Clause 30, the Employer reserves the right to accept or reject any Bid, and to cancel the bidding process and reject all bids, at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or bidders or any obligation to inform the affected Bidder or bidders of the grounds for the Employer's action.
32. Notification of Award and Signing of Agreement	32.1	The Bidder whose Bid has been accepted will be notified of the award by the Employer prior to expiration of the Bid validity period by cable confirmed by registered letter. This letter (hereinafter and in the Conditions of Contract called the "Letter of Acceptance") form shown in Section 6 will state the sum that the Employer will pay the Contractor in consideration of the execution, completion, and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price").
	32.2	The notification of award will constitute the formation of the Contract, subject to the Bidder furnishing the Performance Security in accordance with Clause 33 and signing the Agreement in accordance with Sub-Clause 32.3.
	32.3	The Agreement as shown in form in Section 6 will incorporate all agreements between the Employer and the successful Bidder. It will be signed by the Beneficiary and approved by the Employer and sent to the successful Bidder, within 28 days following the notification of award along with the Letter of Acceptance. Within 21 days of receipt, the successful Bidder will sign the Agreement and deliver it to the Employer.
	32.4	Upon the furnishing by the successful Bidder of the Performance Security, the Employer will promptly notify the other bidders that their bids have been unsuccessful.

33. Performance Security	33.1	Within 21 days after receipt of the Letter of Acceptance, the successful Bidder shall deliver to the Employer a Performance Security in the amount stipulated in the Contract Data and in the form (Bank Guarantee and/or Bond) stipulated in the Bidding Data, denominated in the type and proportions of currencies in the Letter of Acceptance and in Accordance with the Conditions of Contract.
	33.2	If the Performance Security is provided by the successful Bidder in the form of a Bank Guarantee, it shall be issued either (a) at the Bidder's option, by a bank located in the country of the Employer or a foreign bank through a correspondent bank located in the country of the Employer, or (b) with the agreement of the Employer directly by a foreign bank acceptable to the Employer.
	33.3	If the Performance Security is to be provided by the successful Bidder in the form of a Bond, it shall be issued by a surety which the Bidder has determined to be acceptable to the Employer.
	33.4	Failure of the successful Bidder to comply with the requirements of Sub-Clause 33.1 shall constitute sufficient grounds for cancellation of the award and forfeiture of the Bid Security.
34. Advance Payment	34.1	The Employer will provide an Advance Payment on the Contract Price as stipulated in the Conditions of Contract, subject to a maximum amount of 20% of the contract price against a valid Advance Payment Guarantee.
35. Corrupt or Fraudulent Practices	35.1	The Employer requires that Beneficiaries as well as Bidders/Suppliers/Contractors, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, the Employer: (a) defines, for the purposes of this provision, the terms set forth below as follows: (i) "corrupt practice" means the offering, giving, receiving or soliciting of any thing of value to influence the action of a public official in the procurement process or in contract execution; and (ii) "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Beneficiary, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Beneficiary of the benefits of free and open competition; (b) will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question.

G. Bidding Data

Construction of about (100) wells equipped with solar pumping systems and elevated tanks including extending of distribution network systems and public posts with taps. .

Instructions to Bidders Clause	Reference
2.1 - **2.1 - (Instruction to Bidders)**	- The Project Name is The Saudi Program for Drilling of Wells and Rural Development in Africa, Phase V – Republic of The Sierra Leone - The Project Identification Number is P5/2021/The Sierra Leone - The Employer is The Saudi Fund For Development SFD P.O. Box 50483, Riyadh, 11523, Kingdom of Saudi Arabia. - The Beneficiary is Ministry of Water Resources – The Sierra Leone. The financing refers to the type of financing which Employer, as of the date of issue of the bidding documents has approved . The Project is The Construction of about (100) wells equipped with solar pumping systems and elevated tanks including extending of distribution network systems and public posts with taps. .). The project components falls within borehole drilling, procurement, installation of solar driven pumps with Water Pipe System, animation and sensitization and training. The primary objective of the project is to increase access to safe drinking water supply to about 156.000 people in The Sierra Leone. The Consulting Engineer is EDS International/ Mohammed Osama Al-Kabbani The Engineer is the sole supervisor of the works and is responsible to the Employer.
(4.5c)	The essential equipment and personnel to be made available for the Contract by the successful Bidder shall be as shown below.

Minimum required equipment

N^0	Equipment Type and Characteristics	Minimum Number required
01	Drilling Rig	02
02	3 phase generator	01
03	Submersible pump - 3 phase	04
04	Dip meter	03
05	Stop watch	03
06	Welding machine	01
07	4 - wheel drive cars	03
08	Water tanker	02
09	7 ton Truck	02
10	Hight-pressure Compressor	04
11	7 ton crane truck	01
12	Concrete-mixer	02
13	Survey Equipment	01

Minimum required personnel

N^0	The Essential Personnel is	Total Work	Experience

			Experience (years)	In Similar Works (years)
	01	Project Manager	15	05
	02	Civil Engineer	10	05
	03	Hydrogeologist/Geophysicist,	10	05
	04	Hydraulic Engineer	10	05
	05	Surveyor Engineer	10	05
	06	Survey team (at least 3 persons)	05	-
	07	Auto cad operator	05	03
	08	2 Drillers	10	05
	09	2 Assistant drillers	05	05
	10	Solar system expert	10	05
	11	5 Skilled laborers (masons, electricians and mechanics)	10	05
	12	10 Unskilled laborers	10	-
	13	5 Car drivers	10	-
	14	1 crane driver	10	05
(16.1)	The format of the Bid security shall be in accordance with the forms included in the bidding documents and shall be issued by a reputable bank or financial institution selected by the bidder.			
(19.2)	The Employer's address for the purpose of Bid submission is: The Saudi Fund for Development SFD P.O. Box: 50483 Riyadh, 11523 Kingdom of Saudi Arabia			
(20.1)	The deadline for submission of bids shall be on 05/01/2025 at: 14:00 KSA time.			
(23.1)	The bids will be opened in SFD office in Riyadh, Kingdom of Saudi Arabia			
(34.1)	The Standard Form of Performance Security acceptable to the Employer shall be Bank Guarantee. The format of the performance security shall be in accordance with the form included in the bidding documents and shall be issued by a reputable bank or financial institution selected by the bidder.			

SECTION 4

COND

Conditions of Contract

A. General

1. Definitions	1.1	Boldface type is used to identify defined terms. **Bill of Quantities** means the priced and completed Bill of Quantities forming part of the Bid. **Compensation Events** are those defined in Clause 40 hereunder. The **Completion Date** is the date of completion of the Works as certified by the Consulting Engineer (CE), in accordance with Sub-Clause 48.1. The **Contract** is the Contract between the Employer and the Contractor to execute, complete, and maintain the Works. It consists of the documents listed in Clause 2.2 below. The **Contractor** is a person or corporate body whose Bid to carry out the Works has been accepted by the Employer. The **Contractor's Bid** is the completed bidding document submitted by the Contractor to the Employer. The **Contract Price** is the price stated in the Letter of Acceptance and thereafter as adjusted in accordance with the provisions of the Contract. **Days** are calendar days: months are calendar months. **Day works** are varied work inputs subject to payment on a time basis for the Contractor's employees and Equipment, in addition to payments for associated Materials and Plant. A **Defect** is any part of the Works not completed in accordance with the Contract. The **Defects Liability Certificate** is the certificate issued by the Consulting Engineer (CE) upon correction of defects by the Contractor. The **Defects Liability Period** is the period named in the Contract Data and calculated from the Completion Date. **Drawings** include calculations and other information provided or approved by the Consulting Engineer (CE) for the execution of the Contract. The **Employer** is the party who employs the Contractor to carry out the Works. **Equipment** is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.

2. Interpretation	2.1	The **Initial Contract Price** is the Contract Price listed in the Employer's Letter of Acceptance. The **Intended Completion Date** is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date may be revised only by the Consulting Engineer (CE) by issuing an extension of time or an acceleration order. **Materials** are all supplies, including consumables, used by the Contractor for incorporation in the Works. **Plant** is any integral part of the Works that shall have a mechanical, electrical. Chemical, or biological function. The **Consulting Engineer (CE)** is the person named in the Contract Data who is responsible for supervising the execution of the Works and administering the Contract. The **Site** is the area defined as such in the Contract Data. **Specification** means the Specification of the Works included in the Contract and any modification or addition made by the Consulting Engineer and approved by the Employer. The **Start Date** is given in the Contract Data. It is the latest date when the Contractor shall commence execution of the Works. It does not necessarily coincide with any of the Site Possession Dates. A **Subcontractor** is a person or corporate body who has a Contract with the Contractor to carry out a part of the work in the Contract, which includes work on the Site. **Temporary Works** are works designed, constructed, installed, and removed by the Contractor that are needed for construction or installation of the Works. No payment for temporary work. A **Variation** is an instruction given by the Consulting Engineer (CE) which varies the Works. The **Works** are what the Contract requires the Contractor to construct. install, and turn over to the Employer, as defined in the Bidding Data. In interpreting these Condition of Contract, singular also means plural, male also means female and the other way around. Headings have no significance. Words have their normal meaning under the language of the contract unless specifically defined. The Consulting

	2.2	Engineer (CE) will provide instructions clarifying queries about these Conditions of Contract.
		The documents forming the Contract shall be interpreted in the following order of priority: (1) Agreement, (2) Letter of Acceptance, (3) Contractor's Bid. (4) Contract Data, (5) Conditions of Contract, (6) Specifications, (7) Drawings, (8) Bill of Quantities and
3. Language and law	3.1	(9) any other document listed in the Contract Data as forming part of the Contract.
4. Consulting Engineer's Decisions	4.1	The language of the Contract and the law governing the Contract are stated in the Contract Data.
5. Delegation	5.1	Except where otherwise specifically stated, the Consulting Engineer (CE) will decide contractual matters between the Employer and the Contractor in the role representing the Employer.
6.Communications	6.1	The Consulting Engineer (CE) may delegate any of his duties and responsibilities to other people after notifying the Contractor, and may cancel any delegation after notifying the Contractor.
7. Subcontracting	7.1	Communication between parties that are referred to in the Conditions shall be effective only when in writing. A notice shall be effective only when it is delivered.
8. Personnel	8.1	The Contractor may subcontract with the approval of the Consulting Engineer (CE), but may not assign the Contract without the approval of the Employer in writing. Subcontracting shall not alter the Contractors' obligations.
	8.2	The Contractor shall employ the key personnel named in the Schedule of Key Personnel to carry out the functions stated in the Schedule or other personnel approved by the Consulting Engineer (CE). The Consulting Engineer (CE) will approve any proposed replacement of key personnel only if their relevant qualifications and abilities are substantially equal to or better than those of the personnel listed in the Schedule.
	9.1	If the Consulting Engineer (CE) asks the Contractor to remove a person who is a member of the Contractor's staff or work force, stating the reasons, the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the work in the Contract.

9. Employer's and Contractor's Risks	10.1	The Employer carries the risks which this Contract states are Employer's risks, and the Contractor carries the risks which this Contract states are Contractor's risks.
10. Employer's Risks	11.1	By this contract the employer does not carry any risk. The contractor shall notify the consultant engineer and/or the employer to any probable risk to be agreed on the consequence.
11. Contractor's Risks	12.1	From the Starting Date until the Defects Correction Certificate has been issued, the risks of personal injury, death, and loss of or damage to property (including, without limitation, the Works, Plant, materials, and Equipment).
12. Insurance		The Contractor shall provide, in the joint names of the Employer and the Contractor, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles stated in the Contract Data for the following events which are due to the Contractor's risks: (a) loss of or damage to the Works, Plant, and Materials; (b) loss of or damage to Equipment; (c) loss of or damage to property (except the Works, Plant, Materials, and Equipment) in connection with the Contract; and (d) Personal injury or death.
	12.2	
	12.3	Policies and certificates for insurance shall be delivered by the Contractor to the Employer for the Employer's approval before the Start Date. All such insurance shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.
	12.4	If the Contractor does not provide any of the policies and certificates required, the Employer may effect the insurance which the Contractor should have provided and recover the premiums the Employer has paid from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due.
	12.5	Alterations to the terms of insurance shall not be made without the approval of the Employer.
	13.1	Both parties shall comply with any conditions of the insurance policies.
13 Queries about the Contract Data	14.1	The Consulting Engineer (CE) will clarify queries on the Contract Data. The Contractor shall construct and install the Works in accordance with the Specifications and Drawings, beside he shall:

14. Contractor to Construct the Works		(a) Provide an office at his base camp for the Consultant Engineer (EC) with all facilities; furniture, laptops, printing, facsimile, digital cameras, refrigerator, etc… (b) Two four wheel drive vehicles for the sole use of the Supervisor and the Animation Expert (c) One four wheel drive vehicle to the Ministry of Water Resources – The Sierra Leone.
	15.1	All the operation costs of the Consultant premises as well as the three 4WD (including driver cost) are to be provided by the Contractor.
15. The Works to Be Completed by the Intended Completion Date	16.1	The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the Program submitted by the Contractor, as updated with the approval of the Consulting Engineer (CE), and complete them by the Intended Completion Date.
16. Approval by the Consulting Engineer (CE)	16.2 16.3	The Contractor shall submit Specifications and Drawings showing the proposed Temporary Works to the Consulting Engineer, who is to approve them if they comply with the Specifications and Drawings.
	16.4	The Contractor shall be responsible for design of Temporary Works. The Consulting Engineer's (CE) approval shall not alter the Contractor's responsibility for design of the Temporary works.
	17.1 18.1	All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, are subject to prior approval by the Consulting Engineer (CE) before this use.
17. Safety		The Contractor shall be responsible for the safety of all activities.
18. Discoveries	19.1	Anything of historical or other interest or of significant value unexpectedly discovered on the Site shall be the property of the Employer. The Contractor shall notify the Consulting Engineer (CE) of such discoveries and carry out the Consulting Engineer's (CE) instructions for dealing with them.
19. Possession of the Site	20.1	The Employer shall give possession of all parts of the Site to the Contractor. If possession of a part is not given by the date stated in the Contract Data, the Employer will be deemed to have delayed the start of the relevant activities, and this will be a Compensation Event.

20. Access to the Site	21.1	The Contractor shall allow the Consulting Engineer (CE) and any person authorized by the Consulting Engineer (CE) access to the Site and to any place where work in connection with the Contract is being carried out or is intended to be carried out.
	21.2	The Contractor shall carry out all instruction of the Consulting Engineer (CE) which comply with the applicable laws where the Site is located.
21. Instructions, Inspections and Audits	22.1	The Contractor shall permit the Employer to inspect the Contractor's accounts and records relating to the performance of the Contractor and to have them audited by auditors appointed by him, if so required.
22. Disputes		If the Contractor believes that a decision taken by the Consulting Engineer (CE) was either outside the authority given to the Consulting Engineer (CE) by the Contract or that the decision was wrongly taken, the decision shall be referred to the Employer within 14 days of the notification of the Consulting Engineer's (CE) decision. Dispute arising out or in connection to this Contract shall first be resolved by: a) amicable means: Each party shall assign an authorized representative of its executive level personnel. The representatives shall hold meeting in any placed agreed upon by the two parties. The representative shall in good faith negotiate the dispute and reach a solution. Should the two parties fail to reach a resolution acceptable to both parties within a period not exceeding (30) days then the parties shall seek a resolution. b) mediation: The two parties shall assign a mutually agreed upon mediator well known for experience and integrity. The mediator shall carry out the mediation process guided by nationally recognized mediation codes and practice. Should the mediator could not reach a resolution acceptable by both parties within a period not exceeding (30) days then the parties or anyone of them proceed for arbitration in accordance of the arbitration rules of the Saudi Fund for Development. The arbitration award shall be final and binding on both parties. All costs of disputes hall be divided between the Employer and the Contractor.

B. Time Control

23. Program	23.1	Within the time stated in the Contract Data, the Contractor shall submit to the Consulting Engineer (CE) for approval a Program showing the general methods, arrangements, order, and timing for all the activities in the Works..
	23.2	An update of the Program shall be a program showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work, including any changes to the sequence of the activities.
	23.3	The Contractor shall submit to the Consulting Engineer (CE) for approval an updated Program at intervals no longer than the period stated in the Contract Data. If the Contractor does not submit an updated Program within this period, the Consulting Engineer (CE) may withhold the amount stated in the Contract Data from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Program has been submitted.
	23.4	The Consulting Engineer's (CE) approval of the Program shall not alter the Contractor's obligations. The Contractor may revise the Program and submit it to the Consulting Engineer (CE) again at any time. A revised Program shall show the effect of Variations and Compensation Events.
24. Extension of the Intended Completion Date	24.1	The Consulting Engineer (CE) shall extend with the approval of the employer the Intended Completion Date if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date without the Contractor taking steps to accelerate the remaining work, which would cause the Contractor to incur additional cost.
	24.2	The Consulting Engineer (CE) shall decide whether and by how much to extend the Intended Completion Date within 21 days of the Contractor asking the Consulting Engineer (CE) for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.
25. Acceleration	25.1	When the Employer wants the Contractor to finish before the Intended Completion Date, the Consulting Engineer (CE) will obtain priced proposals for achieving the necessary acceleration from the Contractor. If the Employer accepts these proposals, the Intended Completion Date will be adjusted accordingly and confirmed by both the Employer and the Contractor.
	25.2	If the Contractor's priced proposals for an acceleration are accepted by the Employer, they are incorporated in the Contract Price and treated as a Variation.
	26.1	The Consulting Engineer (CE) may instruct the Contractor to delay the start or progress of any activity within the Works.

26. Delays Ordered by the Consulting Engineer	27.1	Either the Consulting Engineer (CE) or the Contractor may require the other to attend a management meeting. The business of a management meeting shall be to review the plans for remaining work and to deal with matters raised in accordance with the early warning procedure.
27. Management Meetings	27.2	The Consulting Engineer (CE) shall record the business of management meetings and provide copies of the record to those attending the meeting and to the Employer. The responsibility of the parties for actions to be taken shall be decided by the Consulting Engineer (CE) either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.
28. Early Warning	28.1	The Contractor shall warn the Consulting Engineer (CE) at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the work, increase the Contract Price or delay the execution of the Works. The Consulting Engineer (CE) may require the Contractor to provide an estimate of the expected effect of the future event or circumstance on the Contract Price and Completion Date.. The estimate shall be provided by the Contractor as soon as reasonably possible.
	28.2	The Contractor shall cooperate with the Consulting Engineer (CE) in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the Consulting Engineer (CE).

C. Quality Control

29. Identifying Defects	29.1	The Consulting Engineer (CE) shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Consulting Engineer (CE) may instruct the Contractor to search for a Defect and to uncover and test any work that the Consulting Engineer (CE) considers may have a Defect.
30. Tests	30.1	If the Consulting Engineer (CE) instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no Defect, the test shall he a Compensation Event.
31. Correction of Defects	31.1	The Consulting Engineer (CE) shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion, and is defined in the Contract Data. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.
	31.2	Every time notice of Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Consulting Engineer's (CE) notice.
32. Uncorrected Defects	32.1	If the Contractor has not corrected a Defect within the time specified in the Consulting Engineer's (CE) notice, the Consulting Engineer will assess the cost of having the Defect corrected, and the Contractor will pay this amount.

D. Cost Control

33. Bill of Quantities	33.1	The Bill of Quantities shall contain items for the construction, installation, testing, and commissioning work to be done by the Contractor.
	33.2	The Bill of Quantities is used to calculate the Contract Price. The Contractor is paid for the quantity of the work done at the rate in the Bill of Quantities for each item.
34. Changes in the Quantities	34.1	If the final quantity of the work done differs from the quantity in the Bill of Quantities for the particular item by more than 25 percent, provided the change exceeds 1 percent of the Initial Contract Price, the Consulting Engineer (CE) shall adjust the rate to allow for the change.
	34.2	The Consulting Engineer (CE) shall not adjust rates from changes in quantities if thereby the Initial Contract Price is exceeded by more than 15 percent, except with the prior approval of the Employer.
	34.3	If requested by the Consulting Engineer (CE), the Contractor shall provide the Consulting Engineer (CE) with a detailed cost breakdown of any rate in the Bill of Quantities.
35. Variations	35.1	All Variations shall be included in updated Programs produced by the Contractor.
36. Payments for Variations	36.1	The Contractor shall provide the Consulting Engineer (CE) with a quotation for carrying out the Variation when requested to do so by the Consulting Engineer (CE). The Consulting Engineer (CE) shall assess the quotation, which shall be given within seven days of the request or within any longer period stated by the Consulting Engineer (CE) and before the Variation is ordered.
	36.2	If the work in the Variation corresponds with an item description in the Bill of Quantities and if, in the opinion of the Consulting Engineer (CE), the quantity of work above the limit stated in Sub-Clause 34.1 or the timing of its execution do not cause the cost per unit of quantity to change, the rate in the Bill of Quantities shall be used to calculate the value of the Variation. If the cost per unit of quantity changes, or if the nature or timing of the work in the Variation does not correspond with items in the Bill of Quantities, the quotation by the Contractor shall be in the form of new rates for the relevant items of work.
	36.3	If the Contractor's quotation is unreasonable, the Consulting Engineer (CE) may order the Variation and make a change to the Contract Price, which shall be based on the Consulting Engineer's (CE) own forecast of the effects of the Variation on the Contractor's costs.
	36.4	If the Consulting Engineer (CE) decides that the urgency of varying the work would prevent a quotation being given and considered without delaying the work, no quotation shall be given and the Variation shall be treated as a Compensation Event.

	36.5	The Contractor shall not be entitled to additional payment for cost that could have been avoided by giving early warning.
37. Cash Flow Forecasts	37.1	When the Program is updated, the Contractor shall provide Consulting Engineer (CE) with an updated cash flow forecast.
38. Payment Certificates	38.1	The Contractor shall submit to the Consulting Engineer (CE) 3 months statements of the estimated value of the work executed less than the cumulative amount certified previously.
	38.2	The Consulting Engineer (CE) shall check the Contractor's monthly statement and certify the amount to be paid to the Contractor.
	38.3	The value of work executed shall be determined by the Consulting Engineer (CE).
	38.4	The value of work executed shall comprise the value of the quantities of the items in the Bill of Quantities completed.
	38.5	The value of work executed shall include the valuation of Variations and Compensation Events.
	38.6	The Consulting Engineer (CE) may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.
39. Payments	39.1	Payments shall be adjusted for deductions for advance payments and retention. The Employer shall pay the Contractor the amount certified by the Consulting Engineer (CE) within 45 days of the date of each certificate.
	39.2	Unless otherwise stated, all payments and deductions will be paid or charged in the proportions of currencies comprising the Contract Price.
	39.3	Items of the Works for which no rate or price has been entered in will not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.
40. Compensation Events	40.1	The following shall be Compensation Events: (a) The Employer does not give access to a part of the Site by the Site Possession Date stated in the Contract Data. (b) The Employer modifies the Schedule of Other Contractors in a way that affects the work of the Contractor under the Contract. (c) The Consulting Engineer (CE) orders a delay or does not issue Drawings, Specifications, or instructions required or execution of the Works on time.

		(d) The Consulting Engineer (CE) instructs the Contractor to uncover or to carry out additional tests upon work, which is then found to have no defects. (e) The Consulting Engineer (CE) unreasonably does not approve a subcontract to be let. (f) Ground conditions are substantially more adverse than could reasonably have been assumed before issuance of the Letter of Acceptance from the information issued to bidders (including the Site Investigation Reports), from information available publicly and from a visual inspection of the Site. (g) The Consulting Engineer (CE) gives an instruction for dealing with an unforeseen condition, caused by the Employer, or additional work required for safety or other reasons. (h) Other contractors, public authorities, Utilities, or the Employer does not work within the dates and other constraints stated in the Contract, and they cause delay or extra cost to the Contractor (i) The advance payment is delayed. (j) The effects on the Contractor of any of the Employer's Risks (k) The Consulting Engineer (CE) unreasonably delays issuing a Certificate of Completion. (l) Other Compensation Events described in the Contract or determined by the Consulting Engineer (CE) shall apply.
	40.2	If a Compensation Event would cause additional cost or would prevent the work being completed before the Intended Completion Date, the Contract Price shall be increased and/or the Intended Completion Date shall be extended. The Consulting Engineer (CE) shall decide whether and by how much the Contract Price shall be increased and whether and by how much the Intended Completion Date shall be extended.
	40.3	As soon as information demonstrating the effect of each Compensation Event upon the Contractor's forecast cost has been provided by the Contractor, it shall be assessed by the Consulting Engineer (CE), and the Contract Price shall be adjusted accordingly. If the Contractor's forecast is deemed unreasonable, the Consulting Engineer (CE) shall adjust the Contract Price based on the Consulting Engineer (CE) own forecast. The Consulting Engineer (CE) will assume that the Contractor will react competently and promptly to the event.
	40.4	The Contractor shall not be entitled to compensation to the extent that the Employer's interests are adversely affected by the Contractor's not

		having given early warning or not having cooperated with the Consulting Engineer (CE).
41. Tax	41.1	The project is taxes, duties and other levies exempted and this is all equipment, tools and personnel of the Contractor. The Employer shall retain from each payment due to the Contractor the proportion stated in the Contract Data until Completion of the whole of the Works.
	42.1	On completion of the whole of the Works, half the total amount retained shall be repaid to the Contractor and half when the Defects Liability Period has passed and the Consulting Engineer (CE) has certified that all Defects notified by the Consulting Engineer (CE) to the Contractor before the end of this period have been corrected.
42. Retention	42.2	On completion of the whole Works, the Contractor may substitute retention money with an "on demand " Bank guarantee.
	42.3	The Contractor shall pay liquidated damages to the Employer at the rate per day stated in the Contract Data for each day that the Completion Date is later than the Intended Completion Date. The total amount of liquidated damages shall not exceed the amount defined in the Contract Data. The Employer may deduct liquidated damages from payments due to the Contractor Payment of
	43.1	liquidated damages shall not affect the Contractor's liabilities.
43. Liquidated Damages	43.2	If the Contractor fails to comply with the Time for Completion in accordance with Clause 48 for the whole of the Works or, if applicable, any Section within the relevant time prescribed by Cluse43.1, then the Contractor shall pay to the Employer all extra Consultant fees due because of that failure and a penalty as subsequently mentioned for the time which shall elapse between the relevant Time for Completion and the date stated in the Taking-Over Certificate of the whole of the Works or the relevant Section, subject to the applicable limit stated in the Appendix to Tender. • For each of the first four of such weeks of delay the sum of 0.25 % per week of the Contract Price • For each of the second four of such weeks of delay the sum of 0.75 % per week of the Contract Price • For each subsequent week of delay thereafter the sum of 1 % per week of the Contract Price. The Employer may, without prejudice to any other method of recovery, deduct the amount of such penalty from any monies due to or to become due to the Contractor, the Payment or deduction of such penalty shall not relieve the Contractor from his obligations to complete the works, or from any other of his obligations and liabilities under this Contract, namely for damages caused by delay.

		If the Intended Completion Date is extended after liquidated damages have been paid, the Consulting Engineer shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate.
44. Advance Payment	43.3	The Employer shall make advance payment to the Contractor of the amounts stated in the Contract Data by the date stated in the Contract Data, against provision by the Contractor of an Unconditional Bank Guarantee in a form and by a bank acceptable to the Employer in amounts and currencies equal to the advance payment. The Guarantee shall remain effective until
	44.1	the advance payment has been repaid, but the amount of the Guarantee shall be progressively reduced by the amounts repaid by the Contractor. Interest will not be charged on the advance payment.
		The Contractor is to use the advance payment only to pay for Equipment, Plant, Materials, and mobilization expenses required specifically for execution of the Contract. The Contractor shall demonstrate that advance payment has been used in this way by supplying copies of invoices or other documents to the Consulting Engineer (CE).
	44.2	The advance payment shall be repaid by deducting proportionate amounts from payments otherwise due to the Contractor, following the schedule of completed percentages of the Works on a payment basis. No account shall be taken of the advance payment or its repayment in assessing valuations of work done, Variations, price adjustments, Compensation Events, or Liquidated
	44.3	Damages.
45. Securities	45.1	The Performance Security shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount and form and by a bank or surety acceptable to the Employer, and denominated in the types and proportions of the currencies in which the Contract Price is payable. The Performance Security shall be valid until a date 28 days from the date of issue of the Certificate of Completion in the case of a Bank Guarantee, and until one year from the date of issue of the Completion Certificate in the case of a Performance Bond.
		If applicable, the Day works rates in the Contractor's Bid shall be used for small additional amounts of work only when the Consulting Engineer (CE) has given written instructions in advance for additional work to be paid for in that way.
	46.1	All work to be paid for as Day works shall be recorded by the Contractor on forms approved by the Consulting Engineer (CE). Each completed form shall be verified and signed by the Consulting Engineer (CE) within two days of the work being done.

46. Day Works	46.2	The Contractor shall be paid for Day works subject to obtaining signed Day works forms.
	46.3	Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Correction periods shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions.
47. Cost of Repair	47.1	

E. Finishing the Contract

48. Completion	48.1	The Contractor shall request the Consulting Engineer (CE) to issue a certificate of Completion of the Works, and the Consulting Engineer (CE) will do so upon deciding that the work is completed.
49. Taking Over	49.1	The Employer shall take over the Site and the Works with in seven days of the Consulting Engineer's (CE) issuing a certificate of Completion.
50. Final Account	50.1	The Contractor shall supply the Consulting Engineer (CE) with a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Consulting Engineer's (CE) shall issue a Defects Liability Certificate and certify any final payment that is due to the Contractor within 56 days of receiving the Contractor's account if it is correct and complete. If not, the Consulting Engineer (CE) shall issue within 56 days a schedule that states the scope of the corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Consulting Engineer's (CE) shall decide on the amount payable to the Contractor and issue a payment certificate.
51. Operating and Maintenance Manuals	51.1	If "as built" Drawings and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates stated in the Contract Data.
	51.2	If the Contractor does not supply the Drawings and/or manuals by the dates stated in the Contract Data, or they do not receive the Consulting Engineer's (CE) approval, the Consulting Engineer (CE) shall withhold the amount stated in the Contract Data from payments due to the Contractor.
52. Termination	52.1	The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract. Either party must write a notice of termination to the other party before termination. A warning letter will be sent to the contractor for the first breach of the contract. Only if the breach is not corrected within a stipulated period indicated in the warning letter or the breach is repeated again shall the Employer notify the contractor of the contract termination.
	52.2	Fundamental breaches of Contract shall include, but shall not be limited to, the following. (a) The Contractor stops work for 28 days when no stoppage of work is shown on the current Program and the stoppage has not been authorized by the Consulting Engineer (CE). (b) The Consulting Engineer (CE) instructs the Contractor to delay the progress of the Works, and the instruction is not withdrawn within 28 days.

		(c) The Employer or the Contractor is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation; (d) A payment certified by the Consulting Engineer (CE) is not paid by the Employer to the Contractor within 84 days of the date of the Consulting Engineer's (CE) certificate; (e) The Consulting Engineer (CE) gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Consulting Engineer (CE); (f) The Contractor does not maintain a Security, which is required; and (g) The Contractor has delayed the completion of the Works by the number of days for which the maximum amount of liquidated damages can be paid, as defined in the Contract Data. (h) if the Contractor, in the judgment of the Employer has engaged in corrupt or fraudulent practices in competing for or in executing the Contract. For the purpose of this paragraph: " Corrupt practice'' means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution. "fraudulent practice'' means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Beneficiary, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Beneficiary of the benefits of free and open competition.
	52.3	When either party of the Contract gives notice of a breach of Contract to the Consulting Engineer (CE) for a cause other than those listed under Sub-Clause 52.2 above, the Consulting Engineer (CE) shall decide whether the breach is fundamental or not.
	52.4	Notwithstanding the above, the Employer may terminate the Contract for convenience.
	52.5	If the Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible.
	53.1	If the Contract is terminated because of a fundamental breach of Contract by the Contract or, the Consulting Engineer shall issue a certificate for the value of the work done and Materials ordered less advance payments received up to the date of the issue of the certificate and less the percentage to apply to the value of the work not completed, as indicated in the Contract Data. Additional Liquidated Damages shall not apply. If

53. Payment upon Termination		the total amount due to the Employer exceeds any payment due to the Contractor, the difference shall be a debt payable to the Employer.
	53.2	If the Contract is terminated for the Employer's convenience or because of a fundamental breach of Contract by the Employer, the Consulting Engineer shall issue a certificate for the value of the work done, Materials ordered, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works, and less advance payments received up to the date of the certificate.
	54.1	All Materials on the Site, Plant, Equipment, Temporary Works', and Works shall be deemed to be the property of the Employer if the Contract is terminated because of the Contractor's default.
	55.1	If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either the Employer or the Contractor, the Consulting Engineer shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which a commitment was made.
54. Property		
	56.1	In the event that the financing of the Project is stopped. (a) The Employer is obligated to notify the Contractor of such suspension within 7 days of having received the suspension notice. (b) If the Contractor has not received sums due within the 28 days for payment provided for in Sub-Clause 41.1, the Contractor may immediately issue a 14-day termination notice.
55. Release from Performance		
	57.1	FIDIC conditions of Contract for work of Civil Engineering Construction as in the Contract Data applies also beside the above conditions.
56. Suspension of Project Financing	57.2	If a condition stipulated here is different of the FIDIC Condition, the conditions clause 1-56 prevails.
57. FIDIC		

SECTION 5

CONTRACT DATA

Bidding and Contract Data

Reference	
1.1 (Instruction to Bidders)	• Project Name: **The Saudi Program for Drilling of Wells and Rural Development in Africa, Phase V - The Sierra Leone**
1.1 (Instruction to Bidders)	• Project Identification Number: **P5/2021/ The Sierra Leone**
1.1 (Instruction to Bidders)	• The Employer is: **The Saudi Fund for Development SFD** **P.O. Box: 50483** **Riyadh, 11523** **Kingdom of Saudi Arabia**
2.1 (Instruction to Bidders)	• The Beneficiary is: **The ministry of Water Resources The Sierra Leone.**
2.1 (Instruction to Bidders)	• The Consultant Engineer is: **EDS INTERNATIONAL Mohammed Os Al-Kabbani/** • Project Country: **The Sierra Leone** • The Sites of Work: 100 villages in the regions of KENEMA, KAILAHUN, KONO, BO, BONTHE, MOYAMBA, OUJEHUN, TONKOLILI, BOMBALI, KARENE, KAMBIA, FALABA, KOINADUGU and PORT LOKO
1.1 (Condition of the Contract)	• The Works Include: • 100 Drilled Wells equipped with simplified solar system steel tanks and water pipe • Work also includes animation/sensitization which means beneficiaries contact with management and maintenance of the water system for awareness, during and after construction.
1.1 (Instruction to Bidders)	• Training of maintenance team and providing spare parts.
	• The employer will specify the date of start of work at the contract negotiation meeting.
	• The work shall be completed with a maximum period of 24 months from start of works. The period includes the rainy season. This is the intended completion date; 24 month after date of start of works.
	The language of the contract documents is English.
	The law that applies to the Contract is the law of The Sierra Leone.
1.1 (Condition of the Contract)	The minimum insurance cover shall be: a) The maximum deductible for the insurance of the works and Plant and Materials is 30 % the cost of these items.
1.2 (Instruction to Bidders)	

3.1 (Condition of the Contract) 12.1 (Condition of the Contract)	b) The minimum cover for insurance of the works and of Plant and Materials in respect of the Contractors faulty design is 80 % the cost of these items. c) The maximum deductible for insurance of equipment is 70 % the cost of these items. d) The minimum cover for loss or damage of Equipment is 80 % the cost of these items. e) The maximum deductible for insurance of other property is 30 % the cost of these items. f) The minimum for insurance for other properties is 80 % the cost of these items. g) The maximum cover for personal injury or death is 100,000 USD for the contract employee and for other persons.
19.1 (Condition of the Contract)	
23.1 (Condition of the Contract)	The Contractor shall submit a revised Program for the works within 7 days of the delivery of the letter of Acceptance.
23.2 (Condition of the Contract)	The period between program update is one month. The amount to be withhold for late submission of an update program is 10,000 USD.
31 (Condition of the Contract)	The Defect Liability Period is 365 days.
42 (Condition of the Contract)	The proportion of payment retained is 5% of each invoice submitted by the Contractor.
43.1 (Condition of the Contract)	The Liquidated damages for the whole of the work is $\frac{1}{720}$ of the contract price. The maximum amount of liquidated damage of the whole of the works is 10 % of the contract price.
44.1 (Condition of the Contract)	The advance payment will be 20 % of the contract price and will be paid to the contractor not later than 15 day after submission of the bank guarantee.
51.1 (Condition of the Contract)	The Performance Security shall be for the following minimum amount equivalent as a percentage of the contract price. a) Bank guarantee: 10 % of the total amount of the contract price. b) Performance Bond:
51.2 (Condition of the Contract)	The standard forms of Performance Security acceptable to the employer shall be unconditional Bank guarantee of the type presented in section V of the Bidding document.
53.1 (Condition of the Contract)	The date by which operating and maintenance manuals and “as built” drawings are required is one month after completion date. The amount to be withhold for following to produce “as built” drawings and/or operation and maintenance manuals by the required date is 10 % of the total amount of the contract.
	The percentage to apply to the value of the work not completed is 100 %.

SECTION 6

FORM OF BID, QUALIFICATIONS INFORMATION, TECHNICAL EVALUATION SHEET FOR BIDDERS, LETTER OF ACCEPTANCE, AGREEMENT, BID SECURITY, TAKING-OVER CERTIFICATE AND DEFECTS LIABILITY CERTIFICATE

Project No.: P5/2021/ The Sierra Leone

Tender No.: P5/2021/ The Sierra Leone /Contractor

Project Title: The Saudi Program for Drilling of Wells and Rural Development in Africa; Phase V in the **The Sierra Leone**.

Contractor: …….

To: The Saudi Fund for Development SFD
P.O. Box: 50483
Riyadh, 11523
Kingdom of Saudi Arabia

Dear Sir,

1. Having examined the Conditions of Contract, Sketches, Technical Specifications, Bill of Quantities and all other documents received with the Invitation to Tender for the execution of the Works in connection with the above name Project and having acquainted ourselves with all the local conditions and Sites, we, the undersigned, offer to execute and complete such Works and remedy any faults and defects therein in conformity with the conditions spelt out in aforementioned documents.

It is understood, that the Contract Price is an absolutely fixed upper limit of the remuneration and payments due by the Employer and we agree to waive any rights which would have the effect that this Contract Price is exceeded.

2. We undertake, if our Tender is accepted, to commence the Works within the time required in the Contract Conditions, and to complete the whole of Works comprised in the contract within the time stated in the Contract Conditions.
3. We agree to be bound by this Tender for the period of 180 days from the submission date stated in the Invitation to Tender and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
4. Unless and until a Contract Agreement is signed, this Tender , together with your written acceptance thereof, shall constitute a binding contract between us.
5. We understand that you are not bound to accept the lowest or any tender you may receive.

Dated this :……. Day of …….

Signature :……. In the capacity of ……

Duly authorized to sign Tenders for and on behalf of ……
……..
……..
(Contractor's name and address in block capitals, stamp)

Encl.: APPENDIX TO TENDER

QUALI FICATIONS INFORMATION

1.lndividual Bidders or Individual Members of Joint Ventures	1.1	Constitution or legal status of Bidder; [attach copy] Place of registration: [insert] Principal place of business: [insert] Power of attorney of signatory of Bid: [attach]
	1.2	Total annual volume of construction work performed in five years, in the internationally traded currency specified in the Bidding Data: [insert]
	1.3	Work performed as prime Contractor on works of a similar nature and volume over the last five years. The values should be indicated in the same currency used for Item 1 .2 above. Also list details of work under way or committed, including expected completion date.

Project name and country	Name of client and Contact person	Type of work performed and year of completion	Value of contract

	1.4	Major items of Contractor's Equipment proposed for carrying out the Works. List all information requested below. Refer also to Sub-Clause 4. 3(d) of the Instructions to Bidders.

Item of equipment	Description, make, and age (years)	Condition (new, good, poor and number available)	Owned, leased (from whom?), or to be purchased (from whom?)

	1.5	Qualifications and experience of key personnel proposed for administration and execution of the Contract. Attach biographical data Refer also to Sub-Clause 4.3 c & e of the instructions to bidders and Sub-Clause 9.1 of the Instruction to Bidders.

Position	Name	Years of experience (general)	Years of experience in proposed position

	1.6	Proposed subcontracts and firms involved, Refer to Clause 7 of Condition of Contract

Sections of the Works	Value of subcontract	Subcontractor (name and address)	Experience in similar work

	1.7	Financial reports for the last five years: balance sheets, profit and loss statements, auditors' reports, etc. List below and attach copies.
	1.8	Evidence of access to financial resources to meet the qualification requirements: cash in hand, lines of credit, etc. List below and attach copies of support documents.
	1.9	Name, address, and telephone, telex, and facsimile numbers of banks that may provide references if contacted by the Employer.
	1.10	Information on current litigation in "which the Bidder is involved.

Other party(ies)	Cause of dispute	Amount involved

	1.11	Statement of compliance with the requirements of Sub-Clause 3.2 of the Instructions to Bidders,

	1.12	Proposed Program (work method and schedule). Descriptions, drawings. And charts, as necessary, to comply with the requirements of the bidding documents.
2. Joint Ventures	2.1	The information listed in 1.1 - 1.11 above shall be provided for each partner of the joint venture.
	2.2	The information in 1.12 above shall be provided for the joint venture.

	2.3 2.4	Attach the power of attorney of the signatory of the Bid authorizing signature of the Bid on behalf of the joint venture. Attach the .Agreement among all partners of the joint venture (and which is legally binding on all partners), which shows that (a) all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms; (b) one of the partners will be nominated as being in charge. Authorized to incur liabilities, and receive instructions for and on behalf of any and all partners of the joint venture: and (c) the execution of the entire Contract, including payment, shall be done exclusively with the partner in charge.
3. Additional Requirements	3.1	Bidders should provide any additional information required in the Bidding Data or to fulfill the requirements of Sub-Clause 4.1 of the Instructions to Bidders, if applicable. The Contractor take the following: (a) Provide a Two new 4 - wheel drive car of reputable mark for the sole use of Consultant Engineer and his crew. (b) Provide an office in his base camp fully furnished and equipped for the use of Consultant Engineer and his staff. (c) Provide accommodation and transportation at all sites camp for the Consultant Engineer and technicians.

Tender Evaluation

Criteria for the technical evaluation

The Technical criteria are stated in the Technical Evaluation Sheet:

1. Experience of the Company will be rated according to the number of similar projects (more than 20 wells projects). The bidder with maximum experience will have a full mark while the rest of bidders marks will be rated as a percentage:
   (Number of References of the bidder / Number of references of the bidder having max of references) X max score.
   This will apply from items a to e in the Technical Evaluation Sheet below.
2. Technical Proposal will be evaluated by the Consultant as per his expertise. The Evaluation report will detail the strength and weakness in each item of the technical proposal (please refer to item 2 in the Technical Evaluation Sheet below).
3. Equipment for Execution of Works: The equipment will be evaluated as per the Capacity, age and number. As stated in the Technical specification two method will be used Rotary Drilling Technique or Down the Hole Hammer. The bidders who will provide the two types of drilling rig will have full grade.
4. Drawings will be evaluated by the Consultant as per his expertise. The Evaluation report will detail the strength and weakness of the suggested drawings by each bidder.
5. Timing will be evaluated by the Consultant as per his expertise. The Evaluation report will detail the strength and weakness of the suggested time schedule by each bidder.
6. Staffing: will be evaluated by the Consultant as per his expertise.
   a) Project Management Staff (senior staff and support staff from the HQ: Project Director, Procurement team, logistic team, quality controller, support staff),
   b) Field Management Staff: please refer to the marks in folio minimum staff,
   c) Field Team, Qualification, number: please refer to the marks in folio minimum staff.

Only bids attaining ≥ 70% will be accepted to qualify for further financial evaluation and will be considered to be substantially responsive.

Criteria for the financial evaluation

Only the technically responsive bids will be evaluated financially.

Bid without the bid guaranty will be considered as non-responsive bid and the financial offer will not be evaluated.

SFD will grant the Saudi Contractors a privilege of 10% in the financial offer to International firms from other Nationalities

Correction of the arithmetic errors.

Identification of anomalous pricing: Eventual anomalous unit prices will be discussed with the prospective winner at the contract negotiation.

1. Identification of front loaded financial proposal: The Consultant will signal to the SFD if the lowest evaluated bid is front loaded (cost that are applied

disproportionately to the works that take place early in the project to improve the cash flow of the Contractor. The SFD will decide how to proceed:

a. Require the Bidder to produce detailed price analyses for any or all items of the Schedules, to demonstrate the internal consistency of the prices with the methods and schedule proposed.
b. Require that the amount of the performance security be increased at the expense of the Bidder to a level sufficient to protect the SFD against financial loss in the event of default of the successful Bidder under the Contract,
c. Consider the tender non responsive and negotiate with the next lowest bidder.

2. Identification of seriously unbalanced financial proposal: The Consultant will signal to the SFD if the lowest evaluated bid is unbalanced. In that case the SFD will:
    a. Require the Bidder to produce detailed price analyses for any or all items of the Schedules, to demonstrate the internal consistency of the prices with the methods and schedule proposed.
    b. Consider the tender non responsive and negotiate with the next lowest bidder.

Technical Evaluation

Section 6 -Technical evaluation sheet

		Contractor 1		**Contractor n**	
1. Experience of the Company	***Max***	***Points***	***Valuation critria***	***Points***	***Valuation critria***
Note: Points estimated from prequalification document			Number of projects		Number of projects
a) Water supply and well construction	5				
b) Surface Construction	5				
c) Sub-Saharan Africa	2				
d) In the country	2				
e) Experience in SFD funded programs	4				
Total 1.	**18**				
2. Technical Proposal	Max	***Points***	Consultant evaluation	***Points***	Consultant evaluation
a) Overall Concept (organization structure of the Contractor for the project and staff tasks), Standards (compliance)	5				
b) Drilling Concept, Digging methods	6				
c) Water Supply network, tanks, solar pump etc. (methodology)	4				
d) Surface Constructions (methodology)	5				
e) Construction Materials (quality)	3				
f) Pumping and Testing Equipment	4				
g) Animation concept and staffing	3				
h) Maintenance, Spare Parts supply	4				
i) Organization of Works	4				
Total 2.	**38**				
3. Equipment for Execution of Works	Max	***Points***	Compliance to Minimum Equipment , Capacity, age	***Points***	Compliance to Minimum Equipment , Capacity, age
The Contractor has to submit the minimum required equipment listed in 4.5c in the Instruction to Bidders.					
a) Drilling/Digging Equipment					
a.1) Mud Drilling rig (more than 300 m)	3				
a.2) Down hole Hammer (more than 300 m)	3				
b) Equipment for surface installations	3				
c) Camps and supply installation	2				
Total 3.	**11**				
4. Drawings	Max	***Points***	Consultant evaluation	***Points***	Consultant evaluation
a) Completeness of construction drawings	5				
b) Quality of drawings, dimensions etc.	3				
Total 4.	**8**				
5. Timing	Max	***Points***	Consultant evaluation	***Points***	Consultant evaluation
a) Specification of Time Schedule	5				
b) Appropriateness	5				
Total 5.	**10**				

5. Staffing	Max	Points	Minimum Key staff and Experience	Points	Minimum Key staff and Experience
a) Project Management Staff (senior staff and support staff from the HQ)	3				
b) Key Field Staff	8				
b1. Project Manager (Engineer),	2				
b2. Civil Engineer,	1				
b3. Hydrogeologist/Geophysicist Engineer,	1				
b4. Hydraulic Engineer,	1				
b5. Surveyor Engineer,	1				
b6. Solar system expert (Engineer)	1				
b7. Animation Expert (Social Expert speaking Swahili and English).	1				
c) Field Team, Qualification, Number (please refer to the minimum required staff listed in 4.5c in the Instruction to Bidders).	4				
Total 6.	15				
Total 1 – 6*	100				
* Minimum Percentage: 70% of Technical Offer					
Final Ranking: Offer with lowest price knowing that the SFD will grant the Saudi Contractors a privilege of 10% in the financial offers compared to international firms from other Nationalities.					

LETTER OF ACCEPTANCE

[date……]

To: [name and address of the Contractor]

This is to notify you that your Bid dated [*date*] for execution of the [*name of 1he Contract and identification number, as given in the Contract Data*] for the contract Price *[amount in numbers and words*] [*name of currency*] is hereby accepted by our Agency.

You are hereby instructed to proceed with the execution of the said Works in accordance with the Contract documents.

Authorized Signature: ----------
Name and Title of Signatory: ----------
Name of Agency: ----------

Attachment: Agreement

FORM OF TENDER SECURITY-[Option 1–Demand Bank Guarantee]

Beneficiary: _____

Request for Tenders No: P5/2021/ The Sierra Leone/Contractor.

Date:_____ TENDER GUARANTEE No.:

Guarantor:

1. We have been informed that (here inafter called "the Applicant") has submitted or will submit to the Beneficiary its Tender (here inafter called" the Tender") for the Construction of about (100) wells equipped with solar pumping systems and elevated tanks including extending of distribution network systems and public posts with taps. .)
2. No. P5/2021/ The Sierra Leone/Contractor.

3. Furthermore, we understand that, according to the Beneficiary's conditions, Tenders must be supported by a Tender guarantee.

4. At the request of the Applicant, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of_____(_____USD) upon receipt by us of the Beneficiary's complying demand, supported by the Beneficiary's statement, whether in the demand itself or a separate signed document accompanying or identifying the demand, stating that either the Applicant:

(a) has withdrawn its Tender during the period of Tender validity set forth in the Form of Bid ("the Tender Validity Period"), or any extension thereto provided by the Applicant; or

b) having been notified of the acceptance of its Tender by the Beneficiary during the Tender Validity Period or any extension there to provided by the Applicant, (i) has failed to execute the contract agreement, or (ii) has failed to furnish the Performance.

5. This guarantee will expire: (a) if the Applicant is the successful Tenderer, upon our receipt of copies of the contract agreement signed by the Applicant and the Performance Security and, or (b) if the Applicant is not the successful Tenderer, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the Tendering process; or (ii) twenty eight days after the end of the Tender Validity Period.

6. Consequently, any demand for payment under this guarantee must be received by us at the office indicated above onor before that date.

_____

[signature(s)]

Note: All italicized *text is for use in preparing this form and shall be deleted from the final product.*

FORMAT OF TENDER SECURITY [Option 2–Insurance Guarantee]

TENDER GUARANTEE No.: _____

1. Whereas …… [*Name of the tenderer]* (hereinafter called "the tenderer") has submitted its tender dated …… [*Date of submission of tender]* for the …… *[Name and/or description of the tender]* (hereinafter called "the Tender") for the execution of__under Request for Tenders No._____.

2. KNOW ALL PEOPLE by these presents that WE …… of …… [**Name of Insurance Company**] having our registered office at …… (hereinafter called "the Guarantor"), are bound unto …….. [*Name of Procuring Entity or the Executing Agency*] (hereinafter called "the Beneficiary") in the sum of …… (Currency and guarantee amount) for which payment well and truly to be made to the said Beneficiary, the Guarantor binds itself, its successors and assigns, jointly and severally, firmly by these presents.

Sealed with the Common Seal of the said Guarantor this ___day of _____ 20 __.

3. NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Applicant:

a) has withdrawn its Tender during the period of Tender validity set forth in the Principal's Letter of Bid ("the Tender Validity Period"), or any extension thereto provided by the Principal; or

b) having been notified of the acceptance of its Tender by the Beneficiary during the Tender Validity Period or any extension thereto provided by the Principal; (i) failed to execute the Contract agreement; or (ii) has failed to furnish the Performance Security, in accordance with the Instructions to bidders ("ITB") of the Beneficiary 's Tendering document.

then the guarantee undertakes to immediately pay to the Beneficiary up to the above amount upon receipt of the Beneficiary's first written demand, without the Beneficiary having to substantiate its demand, provided that in its demand the Beneficiary shall state that the demand arises from the occurrence of any of the above events, specifying which event(s) has occurred.

4. This guarantee will expire: (a) if the Applicant is the successful Tenderer, upon our receipt of copies of the contract agreement signed by the Applicant and the Performance Security and, or (b) if the Applicant is not the successful Tenderer, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the Tendering process; or (ii)twenty-eight days after the end of the Tender Validity Period.

5. Consequently, any demand for payment under this guarantee must be received by us at the office indicated above on or before that date.

_____ _____

[Date] *[Signature of the Guarantor]*

_____ _____

[Witness] *[Seal]*

Note: All italicized text is for use in preparing this form and shall be deleted from the final product.

FORM OF TENDER-SECURING DECLARATION

[The Bidder shall complete this Form in accordance with the instructions indicated]

Date:..... *[Insert date (as day, month and year) of Tender Submission]*

Tender No.:..... . *[Insert number of tendering process]*

To: ..... [Insert complete name of Purchaser]

I/We, the undersigned, declare that:

1. I/We understand that, according to your conditions, bids must be supported by a Tender-Securing Declaration.
2. I/We accept that I/we will automatically be suspended from being eligible for tendering in any contract with the Purchaser for the period of time of [insert number of months or years] starting on [insert date], if we are in breach of our obligation(s) under the bid conditions, because we–(a) have withdrawn our tender during the period of tender validity specified by us in the Tendering Data Sheet; or (b) having been notified of the acceptance of our Bid by the Purchaser during the period of bid validity, (i) fail or refuse to execute the Contract, if required, or (ii) fail or refuse to furnish the Performance Security, in accordance with the instructions to tenders.
3. I/We understand that this Tender Securing Declaration shall expire if we are not the successful Tenderer(s), upon the earlier of:

a) our receipt of a copy of your notification of the name of the successful Tenderer; or
b) twenty eight days after the expiration of our Tender.

4. I/We understand that if I am/we are/in a Joint Venture, the Tender Securing Declaration must be in the name of the Joint Venture that submits the bid, and the Joint Venture has not been legally constituted at the time of bidding, the Tender Securing Declaration shall be in the names of all future partners as named in the letter of intent.

Signed:……..…….. Capacity / title (director or partner or sole proprietor, etc.) …….……

Name:…….. Duly authorized to sign the bid for and on behalf of: *[insert complete name of Tenderer]* Dated on……. day of…….……. *[Insert date of signing]*

AGREEMENT

This Agreement, made the [day] day of [month, [year] between [**Saudi Fund for Development (SFD)**] (hereinafter called "the Employer") and [name and address of Contractor] (hereinafter called "the Contractor"") of the other part.

Whereas the Employer is desirous that the Contractor executes / name and identification number of Contract (hereinafter called the Works) and the Employer has accepted the Bid by the Contractor for the execution and completion of such Works and the remedying of any defects therein.

Now this Agreement witness as follows:

1. In this Agreement, words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to, and they shall be deemed to form and be read and construed as part of this Agreement.

2. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of the Contract.

3. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the works and the remedying of defects wherein the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

In Witness whereof the parties thereto have caused this Agreement to be executed the day and year first before written.

The Common Seal of ----------
was hereunto affixed in the presence of----------
Signed, Sealed, and Delivered by the said ----------
in the presence of ----------
Binding Signature of Employer ----------
- Binding Signature of Contractor ----------

The Saudi Program for Drilling of Wells and

Rural Development in Africa; Phase V - The Sierra Leone

SPECIMEN

Advance Payment Guarantee

Employer The Saudi Fund for Development SFD
P.O. Box: 50483
Riyadh, 11523
Kingdom of Saudi Arabia

Contractor: ……

……

Contract Date: ……

Project No.: P5/2021/The Sierra Leone

Contract/Tender No.: P5/2021/The Sierra Leone/Contractor

Object of Works: Construction of about (100) wells equipped with solar pumping systems and elevated tanks including extending of distribution network systems and public posts with taps. .)
……

Contract Price: US$……

We hereby undertake vis-a-vis the Employer to guarantee independently fulfillment of all of the Contractor's obligations arising from the aforementioned Contract, including any incidental claims, up to the amount of

US$……

(in words:……)

Explicitly waiving all objections and defenses, we undertake to render said payment upon receipt of the Employer first written demand, provided that the latter states that the Contractor has failed to observe all or part of his contractual obligations.

In case of any claim under this guarantee payments by the Guarantor shall be made to the account of the Saudi Fund for Development.

This guarantee shall become effective with the first advance payment made by the Employer and shall expire when the advance payment has been set off in full.

The Employer shall return this guarantee to us as soon as its validity expires.

.....

(Signature of the Guarantor, stamp)

The Saudi Program for Drilling of Wells and

Rural Development in Africa; Phase V - The Sierra Leone

SPECIMEN

Performance Guarantee

Employer
The Saudi Fund for Development SFD
P.O. Box: 50483
Riyadh, 11523
Kingdom of Saudi Arabia

Contractor: ……

Contract Date: ……

Project No.: P5/2021/The Sierra Leone

Contract/Tender No.: P5/2021/The Sierra Leone/Contractor

Object of Works: Construction of about (100) wells equipped with solar pumping systems and elevated tanks including extending of distribution network systems and public posts with taps. .)

Contract Price: US$.....

We hereby undertake vis-a-vis the Employer to guarantee independently fulfillment of all of the Contractor's obligations arising from the aforementioned Contract, including any incidental claims, up to the amount of

US$..... (…. % of the Contract Price)

(in words:.....)

Explicitly waiving all objections and defenses, we undertake to render said payment upon receipt of the Employer first written demand, provided that the latter states that the Contractor has failed to observe all or part of his contractual obligations.

In case of any claim under this guarantee payments by the Guarantor shall be made to the Account of the Saudi Fund for Development.

This guarantee shall become effective with the date of signing the Contract and shall remain valid until the date of issue of the last Taking-Over Certificate.

The Employer shall return this guarantee to us as soon as its validity expires.

.....

(Signature of the Guarantor, stamp)

The Saudi Program for Drilling of Wells and

Rural Development in Africa; Phase V - The Sierra Leone

SPECIMEN

Defects Liability Guarantee

Employer The Saudi Fund for Development SFD
P.O. Box: 50483
Riyadh, 11523
Kingdom of Saudi Arabia

Contractor: ……

Contract Date: ……

Project No.: P5/2021/ The Sierra Leone

Contract/Tender No.: P5/2021/ The Sierra Leone /Contractor

Object of Works: Construction of about (100) wells equipped with solar pumping systems and elevated tanks including extending of distribution network systems and public posts with taps.
.

Contract Price: US$.....

We hereby undertake to grant the Employer an independent guarantee for the warranty claims to which he is entitled vis-à-vis the Contractor pursuant to the aforementioned Contract, including any incidental claims, up to the amount of

US$.....

(in words:.....)

Explicitly waiving all objections and defenses, we undertake to render said payment upon receipt of the Employer first written demand, provided that the latter states that the Contractor has failed to observe all or part of his contractual obligations.

In case of any claim under this guarantee payments by the Guarantor shall be made to the Account of the Saudi Fund for Development.

This guarantee shall become effective upon the date of payment of the retention money on the Contractor's account and shall expire upon the end o the Defects Liability Period, but only after receipt of the Defects Liability Certificate.

The Employer shall return this guarantee to us as soon as its validity expires.

.....

(Signature of the Guarantor, stamp)

The Saudi Program for Drilling of Wells and

Rural Development in Africa; Phase V - The Sierra Leone

SPECIMEN

Advance Payment Guarantee

Employer The Saudi Fund for Development SFD
P.O. Box: 50483
Riyadh, 11523
Kingdom of Saudi Arabia

Contractor: ……..
……..
……..
……..
……..

Contract Date: ……

Project No.: P5/2021/ The Sierra Leone

Contract/Tender No.: P5/2021/ The Sierra Leone /Contractor

Object of Works: Construction of about (100) wells equipped with solar pumping systems and elevated tanks including extending of distribution network systems and public posts with taps.
.

Advance payment pursuant to
the Contract: US$.....

We hereby undertake vis-a-vis the Employer to guarantee independently repayment of the advance payment stipulated above, including any incidental claims, up to the amount of US$.....

(in words:.....)

Explicitly waiving all objections and defenses, we undertake to render said payment upon receipt of the Employer first written demand, provided that the latter states that the Contractor has failed to observe all or part of his contractual obligations.

In case of any claim under this guarantee payments by the Guarantor shall be made to the Account of the Saudi Fund for Development.

This guarantee shall take effect as of ..... it shall expire on return of the guarantee document.

……..…….., …….....

……..…….., …….....
(Signature of the Guarantor, stamp)

The Saudi Program for Drilling of Wells and

Rural Development in Africa; Phase V - The Sierra Leone

SPECIMEN

Taking-Over Certificate

1. This is to certify that the well/surface structure

Nº ……

Region …….

District …….

Village ……..

Has been completed according to the Contract No. P5/2021/ The Sierra Leone

on_____

2. The following minor defects and/or minor remaining works were found:

   a) Minor defects

   b) Minor remaining works

   c) Deadline for correction of defects and, if applicable, for completion of remaining works.

   ……...……...…....

3. Remarks

Place ……...…….. Date ……..

The Engineer …… The Contractor……..

The Government's Representative ……..

The Saudi Program for Drilling of Wells and
Rural Development in Africa; Phase V- The Sierra Leone

SPECIMEN

Defects Liability Certificate

Contractor:

Project No.: P5/2021/ The Sierra Leone

Contract/Tender No.: P5/2021/ The Sierra Leone /Contractor

This is to certify that for site ……..

1. The permanent Works have been completed according to the above mentioned Contract without defects.

2. The Contractor has fulfilled his obligations according to the Contract documents.

Place:

Date:

The Employer / The Engineer:

SECTION 7

TECHNICAL SPECIFICATIONS

1. Introduction:

The contractor is required to closely observe this technical specification to execute the works in this project and instruction of the Consultant Engineer during the course of the project. However the contractor is required to put to the work equipment and tools in good working condition and in sufficient number so as to guarantee conditions work without stoppage beside providing qualified and experience staff to perform the work to the state-of-the art and to the highest standard. The tenderer is supposed to have aquinted himself with the situation in Sierra Leone and the sites of the work. He shall always put the goals of the Saudi Fund for Development of sponsoring the project. The execution of the work, the materials and procedure shall depend on the known International Regulation and standard. Drawing and measurements are to be in SI - units.

This technical specification shall have precedence over any standards.

2. Organization of works:

Immediately following the signing of the contract and for a period not more than 3 months, the contractor has to mobilize his equipment, materials and personnel to his base camp. He has to prepare all construction methods, drawings and final schedule of the work.

The contractor has to collect all relevant information about the hydrogeology of sites to be executed. This will include:

- Interpretation of aerial photos
- Geophysical data

The hydro-geological study shall be conducted for every site in an area bounded by a circle of 5 km. The concerned villages being the centre of the circle.

The study shall consist of:

1. Desk study

1.1 Collection of existing data from relevant department.

1.2 Collection of available maps i.e. topographic, geological and meteorological.

2. Field survey

2.1 Field reconnaissance survey to locate vegetation, depression, houses, farms etc.

2.2 Well inventory within and around the village.

3. Assessment of data and information.

Based on this assessment (4) locations shall be chosen for detailed geophysical survey.

4. Conducting (4) geophysical survey and setting priority of drilling according to the result of the survey.

All these works shall be under the direct Supervision of the Consultant Engineer and the reports of the study to be handed to him.

Meetings shall follow this between the Contractor, the Consultant Engineer and the representative of Water Department.

The list of villages proposed are shown in Annexes.

Based on the results of the geophysical survey, the consultation of the local beneficiaries and the water department, the exact location of each well will be marked on the ground in the presence of the Engineer.

In case the first hole does not produce the required quantity of water, 5 m3/hr the contractor will drill other location in the site up to 3 trails.

The cost of the negative drilling shall be included in the unit rates of the individual items of work in the Bill of Quantities and will not be paid to the Contractor.

The contractor shall furnish his base camp, workshops, parking area, office building, stores, laboratories, etc. which needed for the proper execution of the works. This will include but not limited to preparation of the space including grading, removal of shrumps, garbish, access roads, etc. the contractor can use a government owned land close to the centre of the area but if use private land he has to arrange with the owner on his own expense.

The base camp shall be in a location centre to the project with consultation and agreement of the Consultant Engineer. Site camps shall be at drilling site locations. The main camp has to include a furnitured office for the sole use of the Consultant Engineer staff. The office shall be provided by electricity, printing and faxing machines and desktops.

The contractor shall provide the Consultant Engineer technician with accommodation at the base camp and transport and accommodation at the sites.

The contractor has to provide the Consultant Engineer with a two new four wheel drive car with reputable mark.

A signpost with Project symbol shall be erected at the commencement of the work at each site and also a well identification plate shall be put in the site at completion of the working giving details of the well characteristics.

The contractor has to select people from the village to be a committee for looking after the well management, maintenance and operation. The committee is to be selected by the villagers under supervision of the Consultant Engineer.

3. Description of Work:

This is the works under the Saudi Program of Drilling of Wells and Rural Development in Africa, Phase V in The Sierra Leone. The intention of the programs multiple goals of which:

- To raise the standard of living of the rural population by long-term provision of a safe drinking water supply.

- To improve the water supply situation in rural areas to benefit as many people as possible and provide a basis for gradual development.

- To provide hygienically safe drinking water.

- To train local communities to operate and maintain the water points for a long term benefit.

- To help alleviate unemployment by giving job opportunities to local people.

- To spread the goodwill of the Kingdom of Saudi Arabia towards the poor communities in Africa.

- The work in this project is drilling About (100) wells equipped with solar pumping system and the construction of (100) elevated tanks including extending of distribution Network System and public posts with taps.

HYDROGEOLOGICAL FRAMEWORK AND BOREHOLES DEPTH

The geological framework is generally known with regard to the different intervention regions (KENEMA, KAILAHUN, KONO, BO, BONTHE, MOYAMBA, OUJEHUN, TONKOLILI, BOMBALI, KARENE, KAMBIA, FALABA, KOINADUGU and PORT LOKO)

Regarding the depth of the boreholes :

For all boreholes (F1 and high flow), the layout will give indications of the drilling depths.

The weathering thickness is generally between 34 and 45 meters and can often reach 60m. The estimated average depth of the boreholes will be about 80 meters and will exceptionally exceed 100 meters for type F1 boreholes and 150m for high flow rate boreholes.

The consulting engineer in charge of works control will ensure that the required minimum flow is reached while seeking the best flow and will ensure that the drilling is properly equipped.

Decisions on stopping drilling rest with the consulting engineer although the company has set up the drilling.

In any case and whatever the geological conditions, the Contractor undertakes to carry out the drilling leading to obtaining clear water with the required flow rate (5 m3 / h).

Mode of boreholes execution

The drilling will be carried out by a workshop using the rotary process operating with air, water, foam or mud, specially adapted to the use of the down-the-hole hammer, equipped with a casing device in advance. or allowing the use of temporary PVC or steel working casing. Unless an exemption has been granted by the control, the drilling of the base with a down-hole hammer cannot be done before the installation of a temporary working casing in line with the alteration formations, and correctly anchored in the base.

Crossing unconsolidated levels may require foam injection or the use of mud. The products used in these cases will be of a composition suitable for not clogging the productive layers and must be self-biodegradable.

1. The choice of methods and materials to be used as well as of the exact drilling diameters will be at the initiative of the Contractor and under his sole responsibility. However, it is specified that the following instructions must be observed: Obtaining at least 5 m3 / h, and at least 8" for the diameter of the borehole.

Operating mode

The operating mode will generally look like this :

2. Drilling of clay or clay-sand formations up to the roof of the hard rock.

3. Installation of a PVC or steel work column.

4. Continue drilling in the consolidated rock using the down-the-hole hammer until the required flow is obtained from aquifers accepted by the control. In the event of insufficient flow when stopping drilling, the drilling is declared negative.

The conductivity of the water will be measured during the development phase of the borehole. In the event that it is outside WHO standards, further operations are suspended and the borehole will be considered unfit for consumption and closed. The company is then paid for the service performed. If the test meets the standards, the company will perform flow testing and water analysis. Whatever the result of the water analysis, the company is paid but the borehole can be closed and not taken in acceptance if the water is unfit for consumption.

5. Installation, in line with the water inlets, of a PVC collection column provided that the borehole flow rate is greater than or equal to 5 m3 / h.

6. Installation of the filter bed.

7. Installation of a waterproof plug of expanding clay above the filter bed.

8. Fill the annular space above the plug with expanding clay.

9. Development of drilling.

10. Cementing at the top of the borehole.

11. Closing of the borehole using a padlocked metal cover.

12. Flow test and water analyzes on boreholes deemed to be exploitable.

Sampling

Whatever the drilling method used, the Contractor will take samples from all the formations crossed. In particular, he will take a sample:

- at each meter;
- at each change of rock type;
- at each fracture zone;
- at each water inlet.

Samples (200-300 g) will be stored in plastic bags. On each bag will be indicated the name and serial number of the quarter, the number of the borehole, the depth of sampling. The samples will be stored in compartmentalized wooden boxes, numbered and provided with a card allowing proper identification. The crates will be made according to the instructions of the Technical Project Manager. The crates will be transported and stored by the Contractor at his expense at the headquarters of the Client or his representative.

The Contractor, with the support of the controller responsible for monitoring, will provide a written and detailed geological description of the samples that make up the borehole section.

Measures during construction

The Contractor must communicate to the Technical Project Manager all the information requested, in particular:

- the precise geological description of the layers crossed;
- the depths of the base, of the fractured zones, of the various water inlets;
- the water flow rates, at each change of rod, at each new significant water inlet and at the end of drilling, before fitting;
- the conductivity of the water during drilling in order to abandon the drilling at this stage if the conductivity is out of specification.
- the forward speeds for each rod..

At the end of the drilling, the Contractor will communicate to the Technical Project Manager in written form in the workbook the total depth of the drilling, the depth of water inflows, as well as the flow rate at the end of the drilling.

Measuring instruments

The Contractor will permanently maintain the appropriate measuring instruments on his sites and will make them available to the Contracting Authority's agents so that they can carry out the necessary checks at any time. Failure to do so, the Client will buy them at the expense of the Contractor and the corresponding amount will be deducted from the sums due to him. The Contractor must have all the tools necessary for the execution of the work in accordance with the professional rules in accordance with the required equipment. The precision required for the measurements will be:

- 10% for flow rates;
- 2 cm for the water levels;
- 5 cm for the depths.

Equipment of positive drillings

Les The boreholes deemed positive, that is to say with a flow rate at the end of the borehole greater than or equal to 5 m3 /h, will be systematically and compulsorily cleaned for at least 15 minutes by blowing before the installation of the equipment. Positive boreholes will be equipped upon decision of the control. The catchment plan will be defined after consultation between the works controller and the Contractor's site manager, but the realization of the catchment according to the rules of the art will be the responsibility of the Contractor.

- All collection equipment will be made of new materials and must be approved by the control before its installation. The positive boreholes will be equipped over their entire height with 150/165 mm full and strainer PVC tubes.

The base of the casing column will have a PVC settling tube and will be plugged with a foot plug factory made of screwed PVC and cement. The height of the cap will not exceed 10 cm. The collection column must be equipped with stainless steel centering devices installed around the strainers every three meters to allow a good distribution of the filtering mass around the strainers. To allow a good adaptation of the casing plan to the geological profile encountered, the Contractor must have on the site elements of solid tubes and strained tubes of 1 m and 3 m. The quantities that are expected on average per drilling on the site are as follows :

- 3 elements of 1 m of solid tubes;
- 2 elements of 1 m of strainers;
- 2 elements of 3 m of solid tubes;
- 2 elements of 3 m of strainer tubes;
- and other solid or screened elements 3 m to 6 m in length.

PVC tubing stored on site must be properly protected from direct sunlight.

The annular space will be filled with rolled quartz gravel, up to 5 meters above the upper side of the strainers. The use of lateritic gravel or crushed granite is prohibited. The granulometry of the gravel will be adapted to the aquifer formations.

In crystalline fissured rocks, a 2-4 mm gravel filter bed will be used. In coarse arena weathering formations and loose layers, 1-2 mm gravel will be used. The gravel of these two grain sizes must be available in sufficient quantity on the site in order to avoid delays when equipping the boreholes.

Directly above the filter bed, a dam made of expansive clay will be put in place to isolate the captured part. The dam will be made of expanding clay pellets (dry montmorillonitic clay or equivalent) to a height of 2 meters. The filling of the annular space located above the plug with expansive clay will be carried out after the development of the borehole using raw coal sand-clay materials.

The tolerance on the verticality of the tubes will be 0.5%. The PVC casing will exceed the ground surface by one (01) meter and will be closed by a padlocked metal cover.

The lower part of a borehole could possibly be filled up to a certain depth indicated by the control, before proceeding with the equipment. The filling will be done with the gravel of the filter bed. A wait of at least thirty (30) minutes is mandatory before continuing the equipment. Under these conditions, the entire drilled depth will be taken into account in the billing but the filling will not be remunerated. As a general rule, the infill will not exceed 10 m.

Development of boreholes

The development of boreholes deemed positive will be carried out with an air lift by an independent development unit or by the drilling workshop using an air injection column made of galvanized or flexible pipes of diameter 1 "1 / 2. The water pipe will be formed by the PVC of the borehole. Development by the drilling shop is not allowed.

Development will continue until clear water is obtained, free from sandy or clay particles. The Contractor must control the sand content by the so-called "sand spot" method observed in a 10-liter bucket. The diameter of the sand spot should not exceed 1 cm. The minimum development time is four (4) hours. In rare cases where the basis of the alterations has been captured, the development time will be six (6) hours minimum. If after 6 hours of development, the water does not manage to be clear, the development will be continued at the expense of the Contractor until clear water is obtained.

The flow rate obtained at the start of development must not be less than 10% less than the flow rate obtained at the end of drilling and must remain greater than or equal to 5 m3 / h. Flow rates will be measured every 15 minutes for the duration of development. The water level and the depth of the borehole must be measured before and after development. Only the controller will decide whether to stop or continue development.

If execution faults appear during drilling or during its development, the continuation of development operations beyond four (4) hours will be the responsibility of the Contractor. In the event that this development does not result in obtaining clear water or if the flow rate is more than 10% lower than that obtained at the end of drilling, all the work relating to this

structure will not be taken into accountin the works cost statement. The Contractor shall be required to take back the drilling equipment at its own expense, failing which a new drilling will be carried out near the first.

The annular space of the borehole after development will be filled with raw coal, to a depth of 6 meters below the ground surface.

The first six (6) meters of the annular surface space will be cemented after the drilling has developed in order to seal the annular space, prevent pollution by surface water and anchor the column in the ground. The implementation of the cementation is left to the choice of the Contractor. He could for example use a tube type "gas" descended into the annular space. The slag for the cementation will consist of 50 l of water per 100 kg of cement.

Pumping tests

Development will be done as described above

On these boreholes, it will be carried out after development, stage tests and long-term tests.

These pumping tests will be carried out by means of submerged electric pumps of diameter adapted to the diameter of the equipment casing, able to give a flow rate of 12 m3 / h for a total manometric head (HMT) of 80 meters.

They will take place as follows:

Pumping at a constant rate (this rate will be calculated according to the interpretation of the pumping data in stages) for 72 hours. The long-term pumping will be followed by an ascent which will be observed for 24 hours.

During pumping, no stoppage must take place, otherwise the Contractor will restart the test after reestablishing the initial static level. The resumption of such pumping is the responsibility of the Contractor and the irregularity of the pumping test must be noted in the site book and communicated to the Client.

The flow rate will be measured from a water meter, and a 100-liter gauged tank. The water levels will be measured by means of an electric probe. The depth of the borehole will be measured before and after each pumping test. The Contractor will have an emergency electrical probe in reserve on the site.

The flow rate and dynamic level measurement intervals will be given to the Contractor in good time by the delegated Project Manager.

The rhythm of the pumping or ascent measurements will be as follows :

Duration from start of pumping	Level or drawdown measurements	Flow control / adjustment
0 to 10 mn	Every minute	Every 2 minute
10 to 20 mn	Every 2 minutes	Every 5 minutes
20 to 40 mn	Every 5 minutes	Every 5 minutes
40 to 1h30	Every 10 minutes	Every 10 minutes
1h30 to 3h	Every 15 minutes	Every 15 minutes
3 h to 5 h	Every 30 minutes	Every 30 minutes
5 h to 8h	Every hour	Every hour
More than 8h	Every 2 hours	Every 2 hours

Water analysis

At the end of the test, the Contractor will take at least two water samples, of 1 liter each. The type of sample bottle will be approved by the Technical Project Manager. On each of the two samples will be written the name of the village with its number (Provided by the Client), the borehole number, the time and date of sampling and the name of the person responsible for sampling. The bottles will be hermetically sealed.

Samples from each borehole will be handed over for physico-chemical and bacteriological analysis to an approved laboratory. The samples will be transported by the Contractor's care and at his expense and the bottles placed in suitable crates for transport. The taking of the samples, the storage of the samples and the determination of the maximum delay before their reception at the laboratory will be described by the laboratory. The samples will be analyzed in the laboratory to determine the concentration of the following parameters:

Cations
Anions
Other parameters

Sodium Na
Chlorides
Cl pH

Iron (total) Fe
Sulphates
SO4 Conductivity

Magnesium
Mg Carbonates
CO3 Temp. °C

Manganese
Mn Phosphate
PO4 Odor

Calcium Ca
Fluorine
F Taste

Potassium K
Nitrates
NO3 Color UCV

Salinity Mg/l
Nitrites
NO2 Dissolved solids (105 o C)

Turbidity NTU
Bicarbonates
HCO3..... Arsenic (As)

Ammonium
NH4
Zinc Zn

The arsenic content will be the subject of a specific analysis in accordance with the quantities of the estimate and the unit price schedule.

The entrepreneur must take into account the indications described above when drawing up his financial offer.

The company will also do the bacteriological analysis in an approved laboratory.

To avoid any risk of deterioration, the structures will be closed immediately after the pumping test operations by a padlocked metal cover. The Contractor will be solely responsible for any damage to structures due to a lack of protection during the period from the end of the pumping test.

3-3 WORKS OF WATER SUPPLY SYSTEMS
SUPPLY AND INSTALLATION OF POLYETHYLENE WATER TANKS

PART 1- GENERAL REQUIREMENTS

1.01 Requirements

1. The Contractor shall provide a vertical, high density cross-linked polyethylene tanks and accessories per bill of quantities and drawings, complete and in place, in accordance with the Contract Documents.

Unit Responsibility: The Contractor shall be responsible for furnishing the vertical tank(s) and its accessories for clean water storage as noted.

1.02 REFERENCES, CODES AND STANDARDS

A. American Society of Testing Materials (ASTM).

1. D638	Tensile Properties of Plastics
2. D883	Standard Definitions of Terms Relating to Plastics
4. D1505	Density of Plastics by the Density-Gradient Technique
5. D1693	ESCR Specification Thickness 0.125" F50-10%
6. F412	Standard Terminology Relating to Plastic Piping Systems

B. ANSI Standards: B-16.5, Pipe Flanges and Flanged Fittings

C. Building Code: International Building Code, IBC 2018 / 2021

D. ARM: Low Temperature Impact Resistance (Falling Dart Test Procedure).

E. NSF/ANSI Standard 61, AWWA – Drinking Water System Components

F. ASTM D-1998, Standard Specification for Polyethylene Upright Storage Tanks

1.03 SUBMITTALS

A. Shop Drawings: Shop drawings shall be approved by the consultant engineer or client prior to the manufacturing of the vertical tank(s). Submit the following as a single complete initial submittal.
Sufficient data shall be included to show that the product conforms to Specification requirements. Provide the following additional information:

1. Vertical tank and Fitting Material

a. Resin Manufacturer Data Sheet

b. Fitting Material

c. Gasket style and material

d. Bolt material

2. Dimensioned Tank Drawings

a. Location and orientation of openings, fittings, accessories, restraints and supports.

b. Details of manways, flexible connections, and vents.

3. Calculations shall be stamped and signed by a registered, third-party engineer in the State of installation.

a. Tank restraint system. Show seismic and wind criteria.

B. Manufacturer’s warranty

C. Manufacturer's unloading procedure (see Poly Processing Company Installation Manual)

D. Manufacturer's installation instructions (see Poly Processing Company Installation Manual)

E. Supporting information of Quality Management System.

F. Electrical heat tracing and foam insulation data sheets as required.

G. Supporting documentation of Manufacturer’s certification to ISO, BS, NSF/ANSI Standard 61 – Drinking Water System Components for water treatment units.

H. Manufacturer’s Qualifications: Submit to engineer a list of 5 installations in the same service as proof of manufacturer's qualifications.

I. Factory Test Report

1. Wall thickness verification.

2. Fitting placement verification.

3. Visual inspection

4. Impact test

5. Gel test

6. Hydrostatic test

1.04 QUALITY ASSURANCE

A. The CONTRACTOR shall provide a vertical tank of high-density cross-linked polyethylene. Tanks furnished under this Section shall be supplied by Poly Processing Company or approved equal who has been regularly engaged in the design and manufacture of chemical storage tanks for over 10 years.

B. Tanks shall be manufactured from virgin materials.

C. Tanks shall be manufactured from materials certified to ISO, NSF/ANSI Standard 61 for chemical storage and submit form from NSF supporting chemical certification.

1.05 WARRANTY

A. The warranty shall be provided upon request for the specific service application. For most chemical applications, Poly Processing Company offers a limited 5-year full replacement warranty. For Sulfuric Acid, Hydrochloric Acid, and Sodium Hypochlorite the warranty varies. See Poly Processing Company's chemical specific positions and warranty statement.

PART 2 – PRODUCTS

2.01 GENERAL

A. Tanks shall be rotationally-molded, vertical, high density cross-linked polyethylene, one-piece seamless construction, cylindrical in cross-section and vertical with flat bottoms. Tanks shall be adequately vented as prescribed in Poly Processing Company's Technical Bulletin, Venting-Design for ACFM (air cubic feet per minute). Where indicated, tanks shall be provided with ancillary mechanical fittings and accessories. Tanks shall be marked to identify the manufacturer; date of manufacture and serial numbers must be permanently embossed into the tank.

2.02 MANUFACTURER

A. Tanks shall be manufactured by Poly Processing Company.

2.03 POLYETHYLENE STORAGE TANKS

A. Service: Chemical storage tanks shall be suited for the following operating conditions:

B. High Density Cross-linked Polyethylene resin used in the tank manufacture shall be Poly CL™ or equal and shall contain ultraviolet stabilizer as recommended by resin manufacturer. Where black tanks are indicated, the resin shall have a carbon black compounded into it. The tank material shall be rotationally molded and be a resin that is commercially available at the time of tank manufacture.

C. For sodium hypochlorite, sulfuric acid storage, and other oxidizing chemicals, tank resin shall include an antioxidant polyethylene system (OR-1000) with four times the

antioxidant properties of a standard polyethylene bonded to the interior surface during the manufacturing process.

D. **Wall thickness** for a given hoop stress is to be calculated in accordance with ASTM D 1998. In NO case shall the tank thickness be less than design requirements per ASTM D 1998.

1. The wall thickness of any cylindrical portion at any fluid level shall be determined by the following equation:

T = P x OD/2SD or 0.433 x SG x H x OD/2SD

Where:
T = wall thickness, in
P = pressure, psi
SG = specific gravity, gm/cc
H = fluid head, ft
OD = outside diameter, ft
SD = hydrostatic design stress

a. The minimum wall thickness shall be sufficient to support its own weight in an upright position without external support but shall not be less than 0.187" thick.

2. On closed top tanks the top head shall be integrally molded with the cylindrical wall. Its minimum thickness shall be equal to the thickness of the top of the straight sidewall. In most cases, flat areas shall be provided for attachment of large fittings on the dome of the tank.

3. The bottom head shall be integrally molded with the cylindrical wall. Knuckle radius shall be:

Tank Diameter, ft	Min Knuckle Radius, in
less than or equal to 6	1
greater than 6	1-1/2

4. Tanks with 10,000-liter capacity or larger shall have at least 3 lifting lugs. Lugs shall be designed for lifting the tank when empty.

a. Unless otherwise indicated by Contract drawings, for indoor pneumatic fill, manways shall be 24-in diameter or greater and equipped with an emergency pressure relief device or SAFE-Surge™ Manway with pressure relief at 6" water column to prevent over-pressurization. The SAFE-Surge manway shall be chemically compatible with the chemical being stored. Gaskets shall be closed cell, cross-linked polyethylene foam, Viton, or EPDM materials.

b. Unless otherwise indicated by Contract drawings, for outdoor pneumatic fill, manways shall be 24-in diameter or greater and equipped with Poly Processing Company's F.S.2650® combined manway and vent to prevent over pressurization of tank. Manway must be capable of relieving a volume flow rate of up to 2650 ACFM. Gaskets shall be closed cell, cross-linked polyethylene foam, Viton, or EPDM materials.

c. Unless otherwise indicated, tanks less than 2000 gallons in non-pneumatic applications shall have a manway cover 17-in or smaller of Polyethylene material with a coarse thread. Gaskets shall be closed cell, cross-linked polyethylene foam, viton or EPDM materials.

NOTE: Tanks must be vented to allow for performance at atmospheric pressure, in accordance with the following matrix:

Venting Requirements For Polyethylene Tanks

Mechanical Pump Fill	**Pneumatic Fill**								
IF ≤ 1000 gallons	**IF** - Vent length ≤ 3 feet			**IF -** Vent length > 3' and ≤ 30'			**IF** - Scrubber Application		
Vent size should equal size of largest fill or discharge fitting	**AND - Vent** screen mesh size ≥ 1/4" or no screen used			**AND -** 3 or less 90° elbows with no other restrictions or reduction in pipe size			**Vent pipe size throughout scrubber system CANNOT be reduced!**		
							Centerline of dispersion pipe not to be submersed > 6 inches		
IF > 1000 gallons	**Emergency Pressure Relief Cover Required**			**Emergency Pressure Relief Cover Required**			Perforated dispersion pipe must be same diameter or larger, as vent. Sum of perforations ≥ cross sectional area of pipe		
Vent size should exceed the largest fill or discharge fitting by 1 inch	Tanker Discharge	Inlet/Fitting Size	Minimum Vent Size	Tanker Discharge	Inlet/Fitting Size	Minimum Vent Size	Tanker Discharge	Inlet/Fitting Size	Minimum Vent Size
	2"	2"	4"	2"	2"	6"	2"	2"	6"
	3"	2"	6"	3"	2"	6"	3"	2"	8"
	3"	3"	6"	3"	3"	8"	3"	3"	10"

(2) 2 inch vents **DO NOT EQUAL** 4 inch venting capacity rev. Nov 2006

For detailed venting guidelines, please visit our Technical Resources at www.polyprocessing.com

E. Tank colors shall be natural (unpigmented), black (compounded), or as specified by the ENGINEER with written agreement by the tank manufacturer.

2.04 TANK ACCESSORIES

A. A. Ladder:

1. [Painted carbon steel], [fiberglass], [galvanized carbon steel] or [stainless steel] access ladders shall be provided with the polyethylene chemical storage tanks at locations as shown. Safety cages shall be added to ladders as required, per OSHA.

2. Ladders must be secured to the tank and secured to the concrete to allow for tank expansion/ contraction due to temperature and loading changes. Use proper chemical resistant materials when anchoring to tank dome or sidewall. See Poly Processing Company's Tank Installation Manual.

3. All ladders shall be designed to meet applicable OSHA standards. Reference: OSHA 2206; 1910.27; fixed ladders.

B. Restraint System:

1. Metal components to be [galvanized], [stainless steel], or [painted clips], edge softeners, and tension ring with [stainless steel], [galvanized] cables and clamps.

2. Tank restraint system shall be supplied and the design of same certified by a Structural Engineer registered in the State of tank installation. Design shall conform to the most recent edition of the IBC code for seismic and wind load. Anchor bolts as required by the calculations shall be supplied by the tank manufacturer

C. Heat Tracing:

1. Heat tracing system for temperature maintenance shall be SilcoPad® tank heating systems designed to maintain a desired product temperature, not to exceed 100 degrees F. Each system shall include tank heating pads and a temperature controller. The quantity and type of SilcoPad® is determined by the size of the tank, the desired temperature maintenance and

environmental conditions. Systems shall be available in 30-, 60- or 100-degrees F. Tanks are supplied with the heating panels and a controller installed by Poly Processing Company. Power supply to be the only field installation required.

a. Pads to operate on 120 vac single phase with a maximum power density of 0.5 watts/sq.inch.

b. Silicone pad heaters must fully comply with Article 427-23 (b) of the National Electric Code.

c. Temperature controller to be supplied with two electronic thermostats switching the heating system via one solid state relay. Primary thermostat to control desired product temperature and secondary thermostat to provide over temperature protection at 150 degrees F.

D. Insulation:

1. Insulation used shall be polyurethane foam with a density of 2.5 lb/ft3 with a minimum an "R" value of 6.3/in. The foam shall be applied with a nominal thickness of 2" to the external tank surfaces except the tank bottom.

2. Upon completion of application and curing of the insulation, 2 full coverage coats oflatex mastic coating shall be applied to the surface of the insulation in such manner as to seal the insulation from the outside environment.

2.05 TANKS:

A. Tank Schedule per the following specifications

Note 1: Approximate overall height is measured along the straight cylindrical portion of the tank and includes the dome top.

B. Fittings

1. Tank fittings shall be according to the fitting schedule in 2.05B above. Threaded fittings shall use American Standard Pipe Threads. If tanks are insulated, fittings shall be installed at the factory prior to application of the insulation.

2. Bolted flange fittings shall be constructed of one 150 lb. flange with ANSI bolt pattern, one flange gasket and stud bolts with gaskets. Stud bolts to have chemical resistant polyethylene injection molded heads and gaskets to provide a sealing surface between the bolt head and the interior tank wall. Stud bolt heads are to be color coded for visual ease of identifying the bolt material by onsite operators. Green- 316 Stainless Steel, Black- Titanium, Red- Alloy C-276, Blue- Monel. All materials shall be compatible with chemical service and as indicated in the fitting schedule above. For NSF/ANSI 61 certification, EPDM or Viton GF gaskets shall be supplied.

3. For sodium hypochlorite and sulfuric acid storage, Bolted One-Piece Sure Seal (B.O.S.S.), double flange fittings constructed of virgin polyethylene shall be supplied. Bolts will be welded to a common backing ring and encapsulated with polyethylene preventing fluid contact with the metal material. Flange will have one full face gasket to provide a sealing surface

against inside tank wall. All materials shall be compatible with chemical service and as indicated in the fitting schedule above. For NSF/ANSI 61 certification, EPDM or Viton GF gaskets shall be supplied.

4. Down Pipes and Fill Pipes: Down pipes and fill pipes shall be supported at 6-ft max intervals. Down pipes and fill pipes shall be PVC or material compatible with the chemical stored.

5. U-Vents: Each tank must be vented for the material and flow and withdrawal rates expected. Vents should comply with OSHA 1910.106(F)(iii)(2)(IV)(9). U-vents shall sized by the tank manufacturer and be furnished complete with insect screen if required (Insect screen lessens the vent capacity by 1/3) in accordance with the venting schedule listed above.

6. All fittings on the 1/3 lower sidewall of tanks with capacities $\geq$ 1000 gallons shall have
100% virgin PTFE expansion joint. Expansion joint to have a minimum of 3 convolutions, stainless steel limit cables and FRP composite flanges. Galvanized parts
will not be accepted.

Expansion joint to meet the following minimum performance requirements:

Axial Compression ≥ 0.67”
Axial Extension ≥ 0.67”
Lateral Deflection ≥ 0.51”
Angular Deflection ≥ 14º
Torsional Rotation ≥ 4º

2.06 LEVEL INDICATION

A. Float Indication: The level indicator shall be assembled to the tank and shall consist of PVC float, indicator, polypropylene rope, perforated interior pipe, PVC roller guides, clear UV resistant PVC sight tube and necessary pipe supports. The level indicator shall act inversely to the tank contents and shall not allow entrance of tank contents into the sight tube at any time. Indicator shall be neon orange color for visual ease for onsite operators.

B. Ultrasonic Level Indicator: The ultrasonic level indicator shall be a Flowline ultrasonic level transmitter, level controller with one 4-20 mA or 0-10 VDC continuous level input and NEMA 4X box to be supplied by tank manufacturer.

2.07 FACTORY TESTING

A. Material Testing

1. Perform gel and low temperature impact tests in accordance with ASTM D 1998 on condition samples cut from each polyethylene chemical storage tank.

3. Degree of Crosslinking. Use Method C of ASTM D 1998- Section11.4 to determine the ortho-xylene insoluble fraction of cross-linked polyethylene gel test. Samples shall test at no less than 60 percent.

B. Tank Testing

1. Dimensions: Take exterior dimensions with the tank empty, in the vertical position. Outside diameter tolerance, including out-of-roundness, shall be per ASTM D 1998. Fitting placement tolerance shall be +/- 1/2-in vertical and +/- 1 degree radial.

2. Visual: Inspect for foreign inclusions, air bubbles, pimples, crazing, cracking, and delamination.

3. Hydrostatic test: Following fabrication, the bottom tanks, including inlet and outlet fittings, shall be hydraulically tested with water by filling to the top sidewall for a minimum of 1 hour and inspected for leaks. Following successful testing, the tank shall be emptied and cleaned prior to shipment.

PART 3 - EXECUTION

3.01 DELIVERY, STORAGE, AND HANDLING

A. The tank shall be shipped upright or lying down on their sides with blocks and slings to keep them from moving. AVOID sharp objects on trailers.

B. All fittings shall be installed and, if necessary, removed for shipping and shipped separately unless otherwise noted by the contractor.

C. Upon arrival at the destination, inspect the tank(s) and accessories for damage in transit. If damage has occurred, Poly Processing Company shall be notified immediately.

3.02 INSTALLATION

A. Install the tanks in strict accordance with Poly Processing Company's Tank Installation Manual and shop drawings.

B. Installation will be inspected by manufacturer to verify system flexible connections, venting and fittings are properly installed. In addition to on-sight inspection tank system(s) to be reviewed using tank manual check list as supplied by manufacture as listed below.

C. Manufacturer to provide 1 hour training session to prepare operators to service and maintain the tank system. Included in training session will be (#) training manuals.

D. Manufacturer's trained technician to do an onsite inspection of installation. Inspection will verify chemical application, plumbing connections, venting, and applicable ancillary equipment such as ladders, restraints, etc. A verification of proper installation certificate will be supplied when equipment passes installation checklist.

E. Tank manuals will consist of installation check lists, tank drawing(s) as built, fitting drawings referencing nozzle schedule on tank drawing, materials of construction, and recommended maintenance program.

3.03 FIELD TESTING

A. Poly Processing Company recommends that all tanks be hydro-tested for 24 hours prior to commissioning.

g) Foundations, plans and calculation notes

 The foundations of the reservoir will be in reinforced concrete, either in individual footings or in general raft, dosed at 350 kg of CPA 45 cement per m3.

 In the case of isolated footings, a paving will be poured over the entire surface of the footing. The dimensions of the foundations will depend on the results of the soil tests which must be carried out by the Contractor.

 The assembly will be designed to withstand wind speeds of 140 km / h. The tenderer will present the execution plans for the foundations, formwork, reinforcement, various sections and legs accompanied by a detailed calculation note.

 The working drawings (plans, sections, formwork plans, reinforcement, etc.) must be produced by the Contractor. The calculation rules will be those of BAEL-90 or higher version. The components machined especially for the project will be completely in accordance with the plans provided by the tenderer to allow the installation of the replacement components without difficulty.

Regulation of the water level in the water tower

The water tower will be equipped with a float valve which will close when the high water level in the castle is reached. This will cause an overpressure on the network, which will be detected by a pressure switch placed in the well collection manhole which will then transmit the information to the control box which will stop the pump in operation.

SUPPLY AND INSTALLATION OF PIPES AND ACCESSORIES

Arrangement of the drilling head

The contractor will set up the head of the borehole, including the supply and installation of all hydraulic accessories and pipes, from the gooseneck to the start of the discharge line.

The pipes of the drilling head will be either cast iron or galvanized steel, of suitable diameter, taking into account the drilling equipment of the borehole and the discharge pipe.

These works include:

- Supply and installation of a steel tube with a minimum diameter of 200 mm and fully protected against corrosion;

- Installation of a reinforced concrete block dosed at 350 kg of cement / m3;

- Installation of a closing cover and mounting system for the riser;

- Supply and installation of elbow, fitting and pipe;

- Supply and installation of a cast iron check valve including mounting accessories adapted to the diameter;

- Supply and installation of a suction cup;

- Supply and installation of a DN 50 meter including mounting accessories adapted to the diameter. The installation will be done in accordance with the straight lengths upstream and downstream meter, indicated by the manufacturer;

- Supply and installation of a pressure switch;

- Installation of supports with collar;

- Construction of the drill head manhole, including the metal cover;

- etc. (refer to the drawing of the catchment structure)

NB: The plate at the head of the borehole must be equipped with an opening and a ¾ " pipe with a plug allowing the passage of an electric probe for measurements of the water level in the borehole.

- Supply and installation of pipes

The discharge line

Variable in length and diameter depending on the site, it starts from the borehole to reach the water tower. For the above-ground part, the pipe will be made of galvanized steel and of equivalent standard diameter :

For the diameters and nominal pressure of the various pipes, comply with the validated execution file.

For the length of the discharge line pipes, comply with the validated execution file.

The distribution line

Its nominal diameter varies between 63 to 125 mm.

Pipes storage

PVC pipes will be stored on a level area, free of any hard objects and must be protected from direct sunlight. The Administration reserves the right to refuse the use of any pipe it deems defective.

Pipe laying

a) Execution of earthworks for pipelines

The excavations will be carried out preferably by hand or by mechanical means. The explosive will only be used in case of absolute necessity and after authorization from the Client.

Excavations will be carried out at each point in accordance with the project dimensions indicated on the longitudinal profiles. Unless otherwise indicated in this document, the normal excavation depth is such that the thickness of the backfill is not less than 0.80 m above the upper generatrix of the pipe.

In the case of crossings of important tracks and roads the indicated depths could increase. The trenches will have to deepen regularly as they approach these crossings.

The minimum width will be equal to 0.40 m. The bottom of the excavation will be carefully leveled and purged of any hard material, and niches will be dug at the junctions to allow the pipes to rest along their entire length. The over-depths will be carried out according to the plans without giving rise to the right to a gain.

The Contractor must make himself aware of the nature of the land. Price increases caused by hard terrain will not be granted. Only increases due to the use of jackhammers will be granted.

The minimum slopes and the minimum overlap depending on specific cases will be subject to the approval of the Consulting Engineer.

The Consulting Engineer will take delivery of the completed trench. This reception will mainly focus on the longitudinal profile of the bottom of the trench. The Contractor must therefore always notify the Consulting Engineer after the completion of the trench and before any commencement of the laying of the pipes.

b) Handling and installation of pipes

The Contractor will take all necessary measures to ensure that the transport and handling of the pipes and their accessories do not cause deformation, destruction of the protective coating, or cracks. The Consulting Engineer may prescribe measures in the event of failure on the part of the Contractor. Damaged areas will be repaired according to the advice of the Consulting Engineer.

c) Laying of buried pipes

The pipes will be laid in the excavations on a layer of 0.10 m of fine sand. The flexibility of the pipes makes it possible, under certain conditions, to make curves with large radii without the use of fittings.

The curve must be made between the joints, therefore no deviation to the right of the joints inside the sockets is allowed.

The pipes will be laid in accordance with any specific instructions given by the manufacturer, in addition to concerns about exposure to sunlight and expansion.

The pipes will be held in place by sand jumpers leaving the joints visible.

After the pressure test, a sand backfill is placed up to 0.15 m above the upper generator and carefully tamped, after laying an identification screen, the rest of the trench is backfilled with raw coal material, coming from the excavation itself, well compacted. The various parts or fittings giving rise to changes of direction are wedged by lean concrete stops dosed at 250 kg / m3.

Elbows, tubing pieces, gate valves and all the devices inserted in the pipes and likely to give rise to forces on the ground will be counterbrained, without giving rise to the right to an added value, by concrete blocks whose calculation will be subject to the approval of the Consulting Engineer.

The Contractor will keep the pipes on the site protected from the sun. At each work stoppage, the ends of the pipes being laid will be blocked with a buffer to prevent the introduction of foreign bodies or animals.

The Contractor cannot start the backfill without the permission of the Engineer.

d) Laying of pipes in elevation

The non-buried pipes are made of galvanized steel.

The installation of pipes, fittings and valves in elevation along masonry or concrete walls is carried out by means of clamps fitted with tabs which will be sealed in the wall.

The collars must allow the removal of the part they are holding without having to loosen it.

When the pipes are placed on a floor or above the ground, they rest on small masonry cleats which keep them elevated from the ground.

b) Backfilling

In principle, the materials extracted from the trenches are reused for backfilling. The top face of the backfill must be leveled with great care to avoid water stagnation. After completion of backfilling, excess material will be promptly removed to landfill at the Contractor's expense.

If the pavement of a roadway must be cut to cross the road, the top face of the backfill should be paved with the same material as the original pavement. The Contractor will be responsible in the event of an accident caused by poor maintenance of the backfill of the trenches during the execution of the works.

The pipe being placed on the laying bed, its sides will be lined up to the level of the horizontal axial plane. The coating of the lower part of the pipes and fittings will be carried out by pushing the backfill under the pipe and its sides with a shovel.

The coating material must contain less than 12% of elements smaller than 0.1mm and must not include elements with a diameter greater than 30mm. A warning screen must be installed above the pipe.

Backfilling is done in successive layers of 0.10 m up to 0.20 m above the pipeline and then in layers of 0.20 m, compacted one after the other using the excavation of the trench under conditions that it be redacted from stones (element <100mm). Compaction should be better than 95% of normal proctor.

After backfilling, the contractor will have concrete bollards along the entire route of the pipes as a benchmark. These will be arranged especially to the right of changes of direction and doubled to the right of the gate valves.

Installation of special parts: (Gate valves, suction cups, drains)

a) Tap – Valves

The gate valves will be quarter (1/4) turn in chrome-plated brass or cast iron, with a diameter corresponding to the pipe on which they will be placed.

All buried gate valves will be placed in keyed mouths including a keyed mouth head, an extension PVC tube, a tabernacle. The assembly will be operated by a crutch wrench.

b) Suction cups

The suction cups will be placed in a manhole.

The suction cups will be made of cast iron and their float will have an elastomeric overmolded steel core

c) Drains

The pipes will be equipped with a gate valve placed at the low point of the network and placed in a manhole as shown in the diagram. These changes will purge the network.

CONSTRUCTION OF TAP POST

Public drinking fountains

They constitute the main service points of the network. The public drinking fountains consist of a rectangular paving in the center of which there is a construction serving as a seat supporting 3 draw-off taps. A sump located about 6 m away will collect the water lost by a gutter inside which rubble stones will have been placed.

The rubble must be hard, insensitive to water, sound, non-scalable, non-freezing and non-friable, having the highest possible density (minimum 2.20 t / m3).

This material must be clean, have a homogeneous shape in its three (3) dimensions and be made of quality stones.

The particle size will be between 100 mm and 250 mm, excessively large elements being to be avoided.

The public drinking fountain equipment will include galvanized steel pipes DN 1", 1"3/4 with elbows, reduction pieces and T-pieces, 1" valve connections, 1" 1/2 meter, 1" 1/4 taps, full support valve and all constraints.

The manholes

All buried gate valves will be placed in keyed mouths comprising a keyed valve head, an extension PVC tube. The whole will be operated by a crutch wrench.

All emptying and suction cups will be placed in the manholes, carried out according to the plans provided. The manholes will be closed by prefabricated reinforced concrete slabs.

The various parts or fittings giving rise to changes of direction and tees will be wedged by lean concrete stops dosed at 250 kg / m3. The stops must leave the joints accessible.

The contractor must build watertight reinforced concrete (or masonry) manholes on the drain, air purge and valve devices.

He must first submit standard plans to the Consulting Engineer before they are made.

SECTION 8

BILL OF QUANTITIES

TABLE OF CONTENTS

Item No.	Description	Unit	Qty.	price in US$	
				Unit	Total
1	**Lot 1: Mobilisation, Demobilisation**				
1.1	Mobilisation of all necessary plant, materials, and maintenance of Camp.		1		
1.2	Demobilisation at completion of Contract.		1		
1.3	Transport and set up at well sites for drilling activities.	pcs	100		
1.4	Transport and set up for Surface installations, Solar pumps.	pcs	100		
1.5	**Providing facilities for the WD**				
1.6	4x4 vehicle (Toyota, Nissan, Mitsubishi)	pcs	1		
1.7	**Providing facilities for Consultant Engineer**				
1.8	4x4 vehicle (Toyota, Nissan, Mitsubishi).	pcs	2		
1.9	Furnitured office for the consultant engineer at the base camp this will include office in the base camp fully furnitured with all necessary equipment and tools. Beside accommodation and transportation of technicians at the base camp and sites.	u	1		
Total Lot 1					
2	**Lot 2: Drilled wells**				
2.1	**Lot 2.1: Drilled well for solar systems**				
2.1.1	Hydrogeological and geophysical pre-investigations.	pcs	100		
2.1.2	Drilling with a final diam. of 8".	m	10,000		
2.1.3	Supply and installation of PVC-pipes. DN 165.	m	6,000		
2.1.4	Supply and installation of slotted PVC-pipes DN 165.	M	4,000		
2.1.5	Supply and installation of 1m PVC sump pipes DN 165.	Pcs	100		
2.1.6	Supply and installation of filter gravel.	M	2,600		
2.1.7	Supply and filling into the annular space sealing clay (3m).	m	4,000		
2.1.8	Supply and filling of back fill material.	m	3,000		
2.1.9	Supply and filling in of 4 m cement grout.	m	400		
2.1.10	Development of Drilled Well.	pcs	100		
2.1.11	Test pumping of Drilled Well. Step test CIEH 6 hrs.	pcs	100		

2.1.12	Test pumping of Drilled Well. Long dur. CIEH 24hrs.	pcs	100		
2.1.13	Recovery test; include for measurements and records CIEH 6h.	pcs	100		
2.1.14	Recovery test; include for measurements and records CIEH 24h.	pcs	100		
2.1.15	Disinfection of Drilled Well.	pcs	100		
2.1.16	Bacteriological and chemical analyses.	pcs	100		
2.1.17	Verticality and alignment tests.	pcs	100		
2.1.18	Geo-physical logging for borehole, 100m deep.	pcs	100		
Sub-Total Lot 2.1			***0,00***		
3	**Surface Installations for Solar Water Systems**				
3.1	Construction of a concrete well head, galvanized steel well head and furnishing all necessary parts.	pcs	100		
3.2	Supply and installation of a 100 polyethylene tanks 10m³ and tower of 6m height with all necessary parts	pcs	100		
3.3	Tap posts.	pcs	385		
3.4	Supply and construction of a wire mesh fence.	m	2,000		
3.5	Supply and installation of water pipe from well head to the reservoir.	m	2,000		
3.6	Supply and installation of HDPE pipes (NOD125 PN10)	m	4,000		
3.7	Supply and installation of HDPE pipes (NOD 110 PN10)	m	6,000		
3.8	Supply and installation of HDPE pipes (NOD 90 PN10)	m	10,000		
3.9	Supply and installation of HDPE pipes (NOD 75 PN10)	m	30,000		
3.10	Supply and installation of HDPE pipes (NOD 63 PN10)	m	50,000		
3.11	Provide for road crossing for distribution pipes including excavation, laying of pipes, backfilling & compaction and making bypass for traffic	PM			
Sub-Total Lot 3.2					
4	**Well equipment**				
	Submersible pumps for solar system				
4.1	Supply and install. of submersible pumps (Grundfos type SQ flex HMT 70m), Qmin 50m³/day including all accessories.	pcs	100		

4.2	Supply and install. of submersible pumps (Grundfos type SQ flex HMT 50m), Qmin 90m³/day including all accessories.	pcs	PM		
4.3	Supply and install. of submersible pumps (Grundfos type SQ flex HMT 40m), Qmin 30m³/day including all accessories.	pcs	PM		
4.4	Supply and install. of submersible pumps (Grundfos type SQ flex HMT 60m), Qmin 40m³/day including all accessories.	pcs	PM		
4.5	Supply and install. of submersible pumps (Grundfos type SQ flex HMT 70m), Qmin 30m³/day including all accessories.	pcs	PM		
4.6	**Solar generator of international standard**				
4.6.1	Supply and install. of a complete solar generator Qmin 50m³day, HMT 70m.	pcs	100		
4.6.2	Supply and install. of a complete solar generator Qmin 90m³day, HMT 50m.	pcs	PM		
4.6.3	Supply and install. of a complete solar generator Qmin 30m³day, HMT 40m.	pcs	PM		
4.6.4	Supply and install. of a complete solar generator Qmin 40m³day, HMT 60m.	pcs	PM		
4.6.5	Supply and install. of a complete solar generator Qmin 30m³day, HMT 70m.	pcs	PM		
Total Lot 4		***0,00***			
5	**Lot 5: Training of Service Personnel and Maintenance**				
5.1	Training of mechanics for the maintenance of Solar Water Supply Systems.	pcs	100		
5,2	Supply of tool boxes suitable for maintenance of Solar Systems.	pcs	100		
Total Lot 5		***0,00***			
6	**Lot 6: Animation/Sensitisation**				
	Animation and sensitisation services included mobilisation, transportation (4x4 vehicles, motorbikes) of the animation teams and all necessary equipment from one site to another for all well sites for a period of 24 months, starting from one month prior to the drilling activities. Seminars in the villages (hygiene, formation, accounting, etc.), services including staff and transportation means proposed, to be described by the bidder.	l.s	1		
Total Lot 6		***0,00***			

7.	***Summary of Prices***			***Total Price per Lot***
	Summary Lot 1			***0,00***
	Summary Lot 2			***0,00***
	Summary Lot 3			***0,00***
	Summary Lot 4			***0,00***
	Summary Lot 5			***0,00***
	Summary Lot 6			***0,00***
	TOTAL GENERAL			***0,00***

PS: The VAT is not applicable in this contract. The VAT will be given for information only. The VAT amount will enable the The Sierra Leone Authorities to have an estimate of the tax exception amount.

Equipment

Item No	Equipment	Unit	Unit Price US-Dollar
1	Drilling rig	Month	
2	Drilling compressor	Month	
3	Development compressor	Month	
4	Excavation compressor	Month	
5	General sets	Month	
6	Truck	Month	
7	Pick-up cars	Month	
8	Concrete mixer	Month	
9	Crane truck	Month	
10	5 doors 4*4 car	Month	
11	Submersible pump	Month	
12	Solar panel	Month	

Materials

Item No	Material	Unit	Unit Price US-Dollar
1	Cement	ton	
2	Gravel	M3	
3	Sand	M^3	
4	Mild Steel	ton	
5	Concrete B10	M^3	
6	Concrete B15	M^3	
7	Concrete B25	M^3	
8	Filter Gravel for Drilled Wells, acc. To DIN 4924 Sealing Clay	M^3	
9	Fuel (Diesel / Gazoil)	l	
10	PVC-Screen 6"	M	
11	PVC-Casing 6"	M	
12	HDPE 125	M	

13	HDPE 110	M	
14	HDPE 90	M	
15	HDPE 75	M	
16	HDPE 63	M	
17	Galvanized pipes 4"	M	

Personnel

Item	Proffession	Unit	Unit Price US-Dollar
1	Civil Engineer	Month	
2	Civil Engineer	Month	
3	Well Driller	Month	
4	Hydrogeologist	Day	
5	Hydrogeologist	Month	
6	Geophysicist	Day	
7	Geophysicist	Month	
8	Sociologist	Day	
9	Commercial Clerk	Day	
10	Foreman	Month	
11	Foreman	Day	
12	Mason	Day	
13	Carpenter	Day	
14	Steelflixer	Day	
15	Electrician	Day	
16	Machine operator	Day	
17	Driver	Day	
18	Semiskilled Laborer	Day	
19	Unskilled	Day	
20	Additional Labor force if	Day	

APPENDIX A: LIST OF LOCALITES

DISTRICT	CHIEFDOM	COMMUNITY	TOTAL (100 B/HS)
KENEMA	DAMA	MADINA	1
	KOYA	BOGBOABU	1
	GORAMA MENDE	TONGIE	1
	KANDU LEKPEMA	GBADO	1
	LANGRAMA	YABAIMA	1
	LOWER BAMBARA	PANGUMA	2
		LOWOMA	1
	NIAWA	SUNDUMEI	1
	TUNKIA	GORAHUN	1
	WANDOR	NGOKOMAH	1
	MALEGOHUN	KOJEHUN	1
		NGIEHUN KOJO	1
	SIMBARU	BOAJIBU	1
	NONGOWA	HANGHA	1
		MANO JUNCTION	1
	KENEMA TOTAL		**16**
KAILAHUN	NJALUAHUN	SEGBWEMA	1
	LUAWA	DODO KOTUMA	1
		TALIA	1
		MOFINDOR	1
	UPPER BAMBARA	PENDEMBU	1
		DAMA VULAHUN	1
	MANDU	MOBAI	1
		TAWAHUN	1
	MALEMA	JOJOIMA	1
		NGIEGBOIYA	1
	PEJE WEST	BUNUMBU	1
	JAWIE	DARU	2
	YAWEI	MALEMA	1
		KOILU NGIEYA	1

DISTRICT	CHIEFDOM	COMMUNITY	TOTAL (100 B/HS)
		MOIMANDU	1
	KAILAHUN TOTAL		**16**
KONO	NIMIKORO	TAKONDU CORNER, YENGEMA	1
		WOADEH	1
	NIMIYAMA	PEIYA	1
	SANDOR	KOIDU	2
	LEI	SAIAMA	1
	KAMARA	PAYIMA	1
	GBENSE	KOIDU TOWN	2
	KONO TOTAL		**9**
BO	GBO	GBO	1
	KOMBOYA	NJALA	1
	LUGBU	SUMBUYA	1
	NIAWA-LENGA	NEGBEMA	1
	SELENGA	DAMBALA	1
	BADJIA	NGELEHUN	1
	BAOMA	BAOMA (OLD TOWN)	1
	TINKOKO	TIKONKO	1
	WONDE	GOMBU	1
		BATHURST	1
	VALUNIA	MONGERE	1
		BAOMAHUN	1
	BO TOTAL		**12**
BONTHE	IMPERRI	MORIBA TOWN	1
	SOGBENI	TIHUN	1
		BAUYA	1
	BUM	TORMA	1
	KPANDA KEMOH	MOTUO	1
	BONTHE TOTAL		**5**
MOYAMBA	BUMPEH	ROTIFUNK	1

DISTRICT	CHIEFDOM	COMMUNITY	TOTAL (100 B/HS)
	DASSE	MANO	1
	RIBBI	BRADFORD	1
	KAGBORO	SHENGE	1
	BANTA	MOKANJI	1
	KORI	TAIAMA	1
	MOYAMBA TOTAL		**6**
PUJEHUN	KPANGA KRIM	GOBARU NEW TOWN	1
	MALEN	SAHN TOWN	1
	GALLINESS PERRI	BLAMA	1
	PEJEH	FUTA	1
	MAKPELE	ZIMMI	1
	PUJEHUN TOTAL		**5**
TONKOLILI	DANSOGOIA	BUMBUNA	1
	KUNIKE SANDA	MASINGBI	1
	KUNIKE BARINA	MAKALI	1
	SAMBAYA	BANDUGU	1
	GBONKOLENKEH	YELE	1
	TONKOLILI TOTAL		**5**
BOMBALI	BIRIWA	KARINA	1
	MAKARIE	MASONGBO	1
	GBENDEMBU	GBENDEMBU	1
	BOMBALI SIARI	ROSINT	1
	BOMBALI TOTAL		**4**
KARENE	SANDA TENDERRAN	MATEBOI	1
	TAMBAKHA SIMIBUNGIE	FINTONIA	1
	ROMENDE	FOREDUGU	1
	DIBIA	GBINTI MARIA	1

DISTRICT	CHIEFDOM	COMMUNITY	TOTAL (100 B/HS)
	LIBEISAYGAHUN/GHOMBAHUN	BATKANU	1
	KARENE TOTAL		**5**
KAMBIA	BRIMAIA	KUKUNA	2
	DIXING	DIXING	1
	MAMBOLO	KENEMA TOWN	1
	KHONIMAKA	KONTA	1
	SAMU	KYCHOM	1
	KAMBIA TOTAL		**6**
FALABA	SULIMAH	FALABA	1
	DEMBELIA SINKUNIA	SINKUNIA	1
	MONGO	MONGO 1	2
	FALABA TOTAL		**4**
KOINADUGU	TAMISO	KASINKORO	1
	KAMUKEH	SERIKUNDAY	1
	GBONKOBON KAYAKA	KASSIE	1
	KOINADUGU TOTAL		**3**
PORT LOKO	MARAMPA	KOMRABAI	1
	KOYA	MAMAMAH	1
		MASIAKA	2
	PORT LOKO TOTAL		**4**
TOTAL	**78**	**93**	**100**

APPENDIX C: UNIT PRICE BREAKDOWN SPECIMEN

UNIT PRICE BREAKDOWN SPECIMEN

ANALYSIS SHEET FOR DIRECT & INDIRECT UNIT COSTS

Project:

Item No.: X
Item Description:
Total quantity of Work Item:

Labour Output Per Day Nr/Day.
Equipment Output Per Day Pcs

Material Cost (1:01)					Labour (1:02)					Equipment Cost (1:03)		
Type of Material	Unit	Qty *	Rate	Cost per Unit	Labour by Grade	No.	UF	** Indexed Daily Cost	Total Daily Cost	Type of Equipment	No.	Daily Cost
Water Metre 15mm												
Pipes												
Assorted fittings												
				-					-			
									-			
									-			
									-			
									-			
									-			
									-			
Total (X:-01)					Total (X:02)					Total (X:03)		

A= Materials Unit Cost B= Manpower Unit Cost C=Equipment Unit Cost

Direct Cost : A+B+C =
Over head cost : % =
Profit Cost: % =
Total Unit Cost :

Remark _____
UF: UTILIZATION FACTOR
*: INCLUSIVE OF WASTAGE, TRANSPORTING, HANDLING, ETC.
**: INCLUSIVE OF BENEFITS, TRAVEL SUBSIDES AND COST OF OVERTIME RELATED TO TARGETED OUTPUT.

As per the SFD procedures, the bidders are requested to present their bids as follows:
Envelop 1: Technical envelope containing the original and the two copies. The technical file shall contain: **Power of attorney, Letter of Bid, Bid Security, TECH 1, TECH 2, TECH 3, TECH 4, TECH 5, TECH 6 and a USB key containing the whole Technical file.**
Envelop 2: Financial envelope containing the original and the two copies. The financial proposal shall contain: **Priced Bill of Quantity and the cost breakdown of each unit price**