REQUEST FOR PROPOSAL (RFP)

No. 024 – Restoration of the Laboratory at Tajik Agrarian University

Date of Issuance:	May 28, 2024
Site Visit to Facility for all interested Offerors:	June 7, 2024
Closing Date for Questions:	June 13, 2024, 18:00 Almaty time
Closing Date for Submission of Proposal:	June 24, 2024, 18:00 Almaty time
Subject:	RFP No. 024 "Restoration of the Laboratory at Tajik Agrarian University"

Dear potential applicants,

You are kindly invited to submit a technical and financial proposal to The Branch office of ARD Inc. in the Republic of Kazakhstan (ARD) for the USAID Reginal Water and Vulnerable Environment (WAVE) Activity, funded by the United States Agency for International Development (USAID).

- ARD intends to issue <u>one or two Firm Fixed Price subcontracts</u> for this work.
- Costs incurred by respondents for the preparation of a proposal and the negotiation of contract are not reimbursable.
- ARD is not bound to accept the proposals submitted.
- The Offeror is required to obtain DBA Insurance **prior to commencement of any services** See section 3. Financial Proposal for more information.
- **The Offeror may respond to one or both Statements of Work.** The Offeror may respond with ONE proposal, combining both Statements of Work, or the Offeror may submit individual proposals for either Statement of Work. Offeror must be able to complete all the items stated in Statement(s) of Work to which they respond in <u>Attachment A.1 or Attachment A.2.</u>
- SITE VISIT Tuesday, June 7, 2024 Interested Offerors will have an opportunity to visit the laboratory as one group to gain a better understanding of the work that will be required. All questions and responses during the site visit will be made public to all offerors who are present at that time.
 - Please reserve your space for the site visit no later than June 4, 2024 by sending an email to <u>ARD.WAVE.Procurement@tetratech.com</u> The subject line should read "SITE VISIT". Include the name of your company and the names of any individuals that will be participating.
- ARD reserves the right to order in phases or by activities that are most advantageous to ARD.
- Please note that ARD does not intend to entertain consortia or joint ventures for this procurement.
- Offeror MUST NOT provide any goods and/or services that utilize telecommunications and video surveillance products from the following companies: Huawei Technologies Company, ZTE Corporation, Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company, K or any subsidiary or affiliate thereof, in compliance with FAR 52.204-25. Nor can it provide any services/equipment from Kaspersky Labs.
- If awarded, the subcontractor must have, or be able to obtain a Unique Entity Identification (UEI) number before signing. This identifier can be obtained in the United States System for Award Management (SAM) at https://sam.gov/. If your company/organization is already registered in the SAM system, you may already have an identifier.

<u>Please note that in submitting a response to this RFP, the Offeror understands that USAID is not a party to this solicitation and the Offeror agrees that any protest hereunder must be presented – in writing with full explanation – to ARD for consideration as USAID will not consider protests regarding procurements carried</u>

out by implementing partners. ARD, at its sole discretion, will make a final decision on the protest for this procurement.

Questions:

All questions and inquiries related to this request must be submitted prior to the Closing Date for questions shown above for this RFP. All questions to ARD should be submitted via the below email address: <u>ARD.WAVE.Procurement@tetratech.com</u> No. 24 – Laboratory restoration of TAU.

The subject line should have: "Questions for RFP-24- Laboratory restoration of TAU".

Proposal Submittal requirements:

- The proposal shall be submitted via e-mail to <u>ARD.WAVE.Procurement@tetratech.com</u>
- The Subject line of the email should read: "Laboratory restoration of TAU".

Proposal Instructions and Required Format

It is requested that the Offeror organize its Technical and Financial Proposals as noted below. This request is made to facilitate ARD's review of the submitted material thus enabling a rapid decision and contracting process.

The Offeror shall submit its best price offer/proposal to complete the Statement(s) of Work (SoW) in Attachment A.1 and/or Attachment A.2, and shall contain the following information detailed in Sections 1 thru 4 below:

1. Proposal Cover Letter:

The proposal cover letter should be signed by an authorized representative.

2. Technical Proposal:

The technical proposal must be written in English or Russian language. There should be a maximum of 15 typewritten pages, excluding Attachments/supporting documents, with no more than 3 pages covering A. Firm Information and B. Corporate Capabilities and Past Performance. (Desired Format - Type: Times New Roman, Font Size 11, Margins: 1" all around).

The technical proposal shall address the subjects outlined below:

A. Firm Information

- Provide the name, address, and copy of your firm's business registration in English or Russian.
- Provide the primary contact information for this project.
- If you intend to subcontract any portion of the requested work to other firms or institutions, provide the above information for each partner and briefly describe the work that they will be performing. (Please note that we intend to sign a subcontract with only one firm, i.e., no consortia or joint ventures; and if you plan to subcontract any portion of the work, please identify the intended contractual relationship with other firms)
- Please describe your firm's management structure, list all owners.

B. Corporate Capabilities and Past Performance

- i. Summary of Corporate Capabilities.
- ii. Summary of relevant experience your firm has had in performing work like that described in Attachment A.1 or Attachment A.2. Statement of Work.
- iii. Performance references for similar projects.

For each project, please include the name of the client and his or her contact information (current and most recent information required, within the last three years). It is ARD's intention to contact some of these clients for testimonials regarding your firm's performance in these areas:

• The quality of the work performed by the Offeror,

- The timeliness of the effort performed by the Offeror, and
- Whether the Client would use Offeror's services should they have similar needs in the future?

C. Technical Approach

- i. Please submit a detailed technical write-up of the proposed implementation strategy and management for this specific project detailed in **Attachment A.1 and/or Attachment A.2**.
- ii. Identify the Key Personnel that would be working on this project assuming an award. Please include a brief statement about their capabilities and experience. CVs should be provided.

3. Financial Proposal

The Offeror's Financial proposal must be in USD and represent its best price offer in response to the solicitation, and shall contain the following:

- **A. Budget.** Offerors must use the budget template in **Attachment B**. Proposed Budget should be in MS Excel, in USD. If Offeror is submitting a proposal for both Statements of Work, they should submit a separate budget for each of the Statements of Work.
- **B.** Budget narrative. A detailed narrative describing the basis on which the costs were derived should be provided in a separate annex to allow a complete analysis of the Offeror's cost/price.

Please note, in accordance with USAID regulations, the offeror should budget for worker's compensation insurance with USAID's approved DBA insurance provider – Starr Indemnity & Liability Company (STARR). Details and pricing for DBA insurance can be found here: <u>https://www.usaid.gov/sites/default/files/documents/1868/AAPD17-01-Revised.pdf</u>. The Offeror is requested to please include in the budget a line under ODCs for DBA insurance for budgeted staff (long and short term) and may include the costs of the wire transfer payment. As a reminder, DBA insurance is only applied as a percentage of an individual's actual base salary, not as a percentage of the fully burdened fixed daily rate.

Additionally, please note that the selected Offeror will need to ensure that a DBA insurance policy is obtained from STARR, <u>https://www.starr.com/Insurance/Casualty/Defense-Base-Act/USAID---Defense-Base-Act</u>. The first deliverable of the awarded subcontract will be submission of documentation verifying that DBA insurance is in place.

4. **Source/Nationality/Manufacture:** All services offered in response to this RFP or supplied under any resulting award must meet **USAID Geographic Code 937 and 110** in accordance with the United States Code of Federal Regulations (CFR), <u>22 CFR §228</u>. The cooperating countries for this RFP include: Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan.

5. **Eligibility:** By submitting an offer in response to this RFP, the offeror certifies that it and its principal officers are not debarred, suspended, or otherwise considered ineligible for an award by the U.S. Government. ARD will not award a contract to any firm that is debarred, suspended, or considered to be ineligible by the U.S. Government.

6. **Terms and Conditions:** This is a Request for Proposals only. Issuance of this RFP does not in any way obligate ARD, the USAID Regional Activity of the Environmental Restoration of the Aral Sea, or USAID to make an award or pay for costs incurred in the preparation and submission of an offer. This solicitation is subject to ARD's standard terms and conditions. Any resultant award will be governed by these terms and conditions; a copy of the full terms and conditions is available upon request. Any award resulting from this RFP will be a Firm Fixed Price subcontract.

List of RFP Attachments:

Attachment A.1: Statement of Work for Restoration of Electrical and Pumping Equipment of the Laboratory

Attachment A.2: Statement of Work for Restoration of Installed equipment of the Laboratory

Attachment B: Budget Template

Attachment C: Evaluation Criteria

Attachment D: Certifications

Attachment E: Technical Specifications for A.1

Attachment A.1

Scope of Work (SoW)

Post:	Restoration of the electrical and pumping supplies for the equipment at the Educational and Scientific Laboratory at Tajikistan Agrarian University
Country:	Tajikistan
Type of contract:	Firm Fixed Price Subcontract
Terms:	July 2024 – September 2024

1.0 Overview:

GOAL OF THE PROJECT

One of the goals of the USAID Regional Water and Vulnerable Environment Activity (hereinafter referred to as the Project) is to develop the education sector of Central Asian countries to train modern personnel for the development of the water sector. As the analysis carried out during the development of the strategy for the development of the educational sector in Tajikistan showed, the ratio of lectures, practical and laboratory classes is important for the training of engineering students. The acquisition of skills in the process of learning in practical laboratory classes is no less valuable than lecture classes.

As part of the project, it is planned to modernize the educational and scientific "Branch Laboratory of Hydraulics of Structures, Hydrophysics, Channel Process, Canals and Water Area" on the basis of the "Cluster of Innovations and Research on Water Resources Management" of the Irrigation and Reclamation Faculty of the Tajik Agrarian University named after Sh. Shokhtemur in Dushanbe.

This branch Laboratory is designed to conduct educational and laboratory classes with students on the course "hydraulics" (open and closed riverbeds), as well as to conduct scientific research in the areas of hydromelioration, rational use of water resources, hydraulic engineering, water supply and wastewater disposal.

The existing laboratory building was built in 1951 with the placement of the entire complex of educational and laboratory equipment in one room. However, at present, the educational and scientific laboratory requires reconstruction, restoration of equipment, as well as equipping with more modern educational and laboratory equipment.

The existing laboratory includes:

- 1. Pumps and pumping stations;
- 2. Hydraulic trays with constant and variable slope;
- 3. Tray with side water intake;
- 4. Rectangular cross-section;
- 5. Installations for the determination of suspended sediments and turbidities;
- 6. Installation for determining the filtration properties of soils;
- 7. Tray for calibration of weirs with different cross-sections;
- 8. Tray for laboratory tests on the hydraulics of the structure;
- 9. Instrument for measuring hydrostatic pressure ("Pascal's Law");
- 10. Device for studying the modes of movement of liquids;
- 11. Virtual laboratory "Hydraulics" for the study of filtration in sandy soil at the installation of Darcy's law;
- 12. Device for determining the filtration rate in soils;
- 13. A device for determining the free pressure at different elevations.

THE MAIN PURPOSE OF strengthening and modernizing the educational and scientific "Branch Laboratory of Hydraulics of Structures, Hydrophysics, Channel Process, Canals and Water Area" is:

- Improving the quality of knowledge and potential of the faculty, as well as the formation of professional knowledge and skills among doctoral students, postgraduates, PhDs, masters and bachelors to solve practical problems of integrated assessment in the field of integrated water resources management, by conducting research and experiments in laboratory conditions;
- Resumption of laboratory and seminar classes for bachelor's, master's and PhD students in the following specialties: 1-70040101 Hydraulic engineering; 1-740501 Land reclamation and water management; 1-74050105 Integrated use and protection of water resources; 1-740501 2602 Land reclamation and water management, with the development of scenarios for classes in the form of experiments laboratory work.
- Development of practical scientific research with the conduct of appropriate laboratory and field studies in the performance of scientific work.
- Development of cooperation in conducting research work.
- Initiation of joint projects to conduct scientific research on climate change, new challenges of nature affecting water resources and water use efficiency.

Main tasks:

1. Modernization of the branch laboratory for hydraulics of structures, hydrophysics, channel processes, canals and water areas, in accordance with the prepared defective acts.

GOALS AND OBJECTIVES OF THIS TERMS OF REFERENCE

Goal: Restoration of the electrical and pumping part of the equipment of the Educational and Scientific Laboratory of Hydraulics of Structures, Hydrophysics, Channel Process, Canals and Water Area to full functioning

Tasks:

- 1. Carrying out repair, restoration and preventive works for existing pumping units No. 1, 2, 3, 4 and 5 according to the technical specification Attachment E (Section 2.1)
- 2. Carrying out repair, restoration and preventive works for the existing electric motors on pump units No. 1 and 2, according to the technical specification Attachment E (Section 2.2)
- 3. Purchase and installation of the missing electric motors for pumping units Nos. 3, 4 and 5, as well as for the Hydraulic Tray with Variable and Constant Slope and the Instrument for Measuring Hydrostatic Pressure, Experimental Equations of Hydrostatics and Pascal's Law according to the Technical Specification Attachment E (Section 2.3)
- 4. Repair and restoration of the existing electrical network in the laboratory and restoration of switchboards in accordance with the technical specification

2. Terms of Reference/Activities/Tasks

1. Pumps & Pumping Stations

Pumps and pumping station for water supply facilities, equipment and devices that are located in this room, which pumps water, are taken from the existing reinforced concrete 10 m3 antechamber, from where it is fed into a permanent distribution metal tank with a capacity of W=10 m3 and serves more than 11 equipment and facilities for laboratory work. Total design flow rate and lifting capacity of the station Q = 470 m3/h and H = 30 m. There are three pressure pipelines with a diameter of 150 mm, each with a length of 4.0 m. There are two pumps of the KM90/35 type with asynchronous electric motors of the 4AM160-S2 brand with a capacity of N=15 kW, n=2900 rpm and 1 pump of the K290-30 type, and a flow rate of Q=290 m3/h, H=28.6 m with asynchronous electric motors of the AO-72-4 brand with a capacity of N = 20 kW, n=1500 rpm. The design flow rate of one pump of the KM type is Q = 90 m3/h, H=30 m.

During a detailed technical inspection of pumps and pumping units, it was revealed that during the period of use (operation) all existing main and auxiliary equipment has become obsolete and requires restoration or partial replacement.

The following work must be carried out within the framework of this terms of reference:

First pumping unit:

Table 1 – First pumping unit:

№, п/н	List of equipment,	Unit	Qnty	Notes
	Devices & Spare Parts	measurement		
1	Pump KM 80/28.6; 8.2 kW; 2850 rpm, faulty, no lubrication	Unit	1	Needs to be overhauled
2	Check valve Ø 150 - not working	Unit	1	Needs to be replaced
3	Electric motor type 4A-160S2Y3; 15 kW; 2910 rpm; is in a faulty condition, without lubrication,	Unit	1	Repairs are required
4	Pressure steel pipeline for pumps with a diameter of $Ø$ 150; Length 5 m, pipeline surface covered with corrosion	M ²	2,355	Clean & Paint
5	Cast iron gate valve PN 150; The elastic properties of the sealing seals are lost, do not ensure the tightness of the valve interfaces	Unit	1	Repairs need to be made
6	Cast-iron gate valve Ru-50; The elastic properties of the sealing seals are lost, do not ensure the tightness of the valve interfaces	Unit	1	Repairs need to be made
7	Pressure gauge MO43-R10 10 Atm. there are no pressure gauges at the installation site,	Unit	2	Purchase & Install
8	The grounding of the pumping unit is destroyed	Unit		needs to be restored
9	Control sheets, STU grades $-62 - 15 - 60$; 28 kW -380 Volts, it is very outdated and unusable	Unit	1	Restore or replace internal content
10	The power cable and the 380 volt starting cable are very outdated and unusable	М	12	Replace

Second Pump Unit

Table 2 - Second Pump Unit:

№, п/н	List of equipment,	Unit	Qnty.	Notes
	Devices & Spare Parts	measuremen t .		

1	Pump KM 80/35; 11 kW; 1450 rpm; 1 – pcs – is not in working condition,	Unit	1	Major renovation required
2	Check Valve - Does Not WorkØ 150	Unit	1	Needs to be replaced
3	Electric motor type 4A169S2Y3; 15 kW; 2850 rpm	Unit	1	A major overhaul is needed
4	Steel pressure pipeline; 5 m long, surface covered with corrosion Ø 150	М	2,355	Clean & Paint
5	Cast iron gate valve PN – 150; - Rubbed elastic properties of sealing oil seals-type 4-M8	Unit	1	Repairs need to be made
6	Cast iron gate valve PN-50 - lost the elastic properties of sealing seals	Unit	1	A major overhaul is needed
7	MO43-R10 At pressure gauge; -Missing	Unit	2	Purchase & Install
8	The grounding of the pumping unit is destroyed	М	8	needs to be restored
9	Control sheets, STU grades $-62 - 15 - 60$; 28 kW -380 Volts, it is very outdated and unusable	Unit	1	Restore or replace internal content
10	The power cable and the 380 volt starting cable are very outdated and unusable	М	12	Needs to be replaced

Third Pump Unit

Table 3 - Third Pump Unit:

№, п/н	List of equipment,	Unit	Qnty.	Notes
	Devices & Spare Parts	measuremen t .		
	Pump KM 320/90; 11 kW; 1450 rpm; 1 – pcs non-operating, without lubrication	Unit	1	Overhaul required
	Check valve; doesn't workø 200	Unit	1	Needs to be replaced
	Electric motor type AO-72-4; 20 kW; 1450 rpm; 1 – pcs is not in working condition	Unit	1	Electric motor needs to be replaced
	Steel pressure pipeline; 5 m long, surface covered with corrosion Ø 150	M ²	2,355	Clean & Paint
	Cast iron gate valve PN 150; Lost elastic property of sealing seals, type 4-M8	Unit	1	Repairs need to be made
	Cast iron gate valve PN 50 - rubbed elastic property of sealing seals, type 4-M8	Unit	1	Repairs need to be made
	MO43-R10 At pressure gauge; -Missing	Unit	2	Purchase & Install
	The grounding of the pumping unit is destroyed	М	6	needs to be restored
	Control sheets, STU grades – 62 – 15 – 60; 28 kW – 380 Volts, it is very outdated and unusable	Unit	1	Restore or replace internal content

The 380 V supply and start-up cable is very	М	6	Replace
outdated and unusable			

Pump units No. 4 and No. 5

Table 4 – Pumping units No. 4 and No. 5:

№,	List of equipment, devices and spare parts	Unit	Qnty.	Notes
п/н		measureme		
		nt.		
	Pump KM 20/6; 7 kW; 2900 rpm; is in a non-	Unit	2	Major renovation required
	operational state			
	The check valve doesn't work, Ø 50	Unit	2	Needs to be replaced
	Electric motor type 4A11-16OS2Y3; 7.5 kW; 2910	Unit	2	Purchase a new electric motor
				2910 rpm
	Steel pressure pipeline; 5 m long - surface	M ³	0,989	Clean & Paint
	covered with corrosion Ø 63			
	Steel pressure pipeline; 6 m long - the surface is	M ²	4,71	Clean & Paint
	covered with corrosion, Ø 250			
	Cast iron gate valve RU-250 has lost the elastic	Unit	2	Repairs need to be made
	property of sealing collars and oil seals			
	Cast iron gate valve PN 50, - loss of elastic	Unit	5	Repairs need to be made
	properties of sealing seals			
	The grounding of the pumping unit is destroyed	М	6	Needs to be restored
	Control sheets, STU grades – 62 – 15 – 60; 28 kW	Unit	2	Replace
	- 380 Volts, it is very outdated and unusable,			
	The 380 V supply and start-up cable is very	М	6	Replace
	outdated and unusable			
	2 sets of couplings coupled with fasteners	Set	2	Must be purchased and
				installed
	Switchboards (SR) obsolete, not suitable for	Unit	5	Needs to be replaced
	operation – 250 A – 380 Volts			

2. Hydraulic tray with variable and constant slope

A hydraulic flume with a variable slope is used to conduct scientific research in the field of hydraulics of open channels, weirs, spillway and water breaker structures, mechanical equipment of hydraulic structures and other hydraulic processes.

Table 5 - Hydraulic tray with variable and constant slope:

Nº	List of equipment, devices and spare parts	Unit measureme nt	Qty	Notes
	Purchase and installation of electrical control panels (MCh-380 v)	Unit	1,0	Purchase & Install
	Gearboxes with electric motor 4A11-16OS2Y3; 2 kW; 1000 rpm – Set, Variable Slope Trays –	Set	1,0	A complete set needs to be replaced
	Gearboxes with electric motor 4A11-16OS2Y3; 2 kW; 1000 rpm – Set, Variable Slope Trays –	Set	1,0	A complete set needs to be replaced
	Replacement of a set of lifting parts (pulley, cable $-\emptyset = 15$ mm, length -75 m, whispers -2 pcs.). For trays with variable slope $-$	Set	2,0	A complete set of rollers needs to be replaced

3. Instrument for measuring hydrostatic pressure, experimental equations of hydrostatics and Pascal's law

This laboratory unit is designed to perform laboratory work in all major areas of fluid mechanics. It contains eight fully functional laboratory facilities and stands built on the principles of simulation-numerical modeling of physical processes. Study of filtration in sandy soil at the Darcy plant. The unit is a vertical column of square cross-section made of transparent organic glass, filled with four layers of sandy soil of various sizes and a layer of fine gravel. At the boundaries of the layers there are fittings to which glass piezometers are connected via rubber hoses to measure the heads.

To eliminate the above malfunctions and provide the necessary equipment, a list of equipment was compiled, which are given in Table 6.

Table 6 - Instrument for measuring hydrostatic pressure, experimental equations of hydrostatics and Pascal's law:

№.	Equipment Name	Unit measurement	Qnty	Note
	There are no pumping units complete with electric motors of the K30 m3/h type (cantilever type)	Unit	2	Purchase & Install
	Pump Control Cabinets (SHUN) is an automated system designed for synchronous operation of a group of main and standby pumps; Optionally, electrically driven gates and tank system sensors of various types and configurations. It has a complete set and is manufactured according to the customer's technical requirements for a specific electromechanical part of the equipment.	Unit	2	Purchase & Install

4. Brief description of the works:

The work is planned at the educational and scientific "Branch Laboratory of Hydraulics of Structures, Hydrophysics, Channel Process, Canals and Water Area" of the Irrigation and Reclamation Faculty of the Tajik Agrarian University named after Sh. Shokhtemur in Dushanbe.

NOTE: The supplier is obliged to carry out work in accordance with SNiP and guarantee the stability and safety of existing equipment after repair and replacement of new parts.

4.1 Environmental requirements:

- In accordance with the requirements of the legislation in the field of environmental protection, provide and carry out all necessary measures to reduce the impact on the environment.
- Compliance with the requirements of standards for labor protection, industrial safety, environmental safety of work and subsoil protection.
- It is necessary to take into account the requirements of SNiP (local regulations and codes) when planning and carrying out work.

NOTE:

The service provider must provide an estimate and quotation for repairs, the purchase of the required equipment, as well as the cost of installation, commissioning and start-up of all equipment. The cost of repairs should also include the cost of bringing the existing equipment into proper condition (painting, corrosion cleaning, etc.)

4.2 Deliverables and deadlines:

Key results	Deadlines
Carrying out repair, restoration and preventive works for existing pumping units No. 1, 2, 3, 4 and 5 according to the technical specification Attachment E	July 30
Result:	
Pumping units No. 1, 2, 3, 4 and 5 have been repaired, tested and fully operational	
Carrying out repair, restoration and preventive works for the existing electric motors on pump units No. 1 and 2, according to the technical specification Attachment E	July 30
Result:	
Electric motors on pump units No. 1 and 2 have been repaired, tested and fully operational	
Purchase and installation of the missing electric motors for pumping units Nos. 3, 4 and 5, as well as for the Hydraulic Tray with Variable and Constant Slope and the Instrument for Measuring Hydrostatic Pressure, Experimental Equations of Hydrostatics and Pascal's Law according to the Technical Specification Attachment E	August 15
Result:	
Electric motors for pumping units No. 3, 4 and 5, as well as for the Hydraulic Tray with Variable and Constant Slope and the Hydrostatic Pressure Measuring Device have been purchased, installed, tested and fully operational	
Repair and restoration of the existing electrical network in the laboratory and restoration of switchboards in accordance with the technical specification.	August 15
Result: The power grid has been restored, tested and fully operational	
Final stage – Handover of completed worksCompletion of work and transfer of the final result. Verification and acceptanceof the entire system	August 31
Result:	
The system of pumps and electric motors are tested and fully operational	

5.0 Applicant's Work Experience Requirements

- At least 5 years of experience in repair and installation work;
- Experience in procurement of materials and equipment.
- Licensed construction contractors.
- Licensed electricians.
- Warranty period of the procured electronic equipment must be at least 12 months.

6. Implementation and Reporting Period

6.1 Acceptance of works

- According to the act of work performed;
- The warranty period is 3 years for all structures.

6.2 Timing of work

All results must be submitted by August 31, 2024.

Attachment A.2

Scope of Work (SoW)

Post:	Restoration of equipment installed at the Educational and Scientific Laboratory at Tajikistan Agrarian University
Country:	Tajikistan
Type of contract:	Firm Fixed Price Subcontract
Terms:	July 2024 – September 2024

1.0 Overview:

GOAL OF THE PROJECT

One of the goals of the USAID Regional Water and Vulnerable Environment Activity (hereinafter referred to as the Project) is to develop the education sector of Central Asian countries to train modern personnel for the development of the water sector. As the analysis carried out during the development of the strategy for the development of the educational sector in Tajikistan showed, the ratio of lectures, practical and laboratory classes is important for the training of engineering students. The acquisition of skills in the process of learning in practical laboratory classes is no less valuable than lecture classes.

As part of the project, it is planned to modernize the educational and scientific "Branch Laboratory of Hydraulics of Structures, Hydrophysics, Channel Process, Canals and Water Area" on the basis of the "Cluster of Innovations and Research on Water Resources Management" of the Irrigation and Reclamation Faculty of the Tajik Agrarian University named after Sh. Shokhtemur in Dushanbe.

This branch Laboratory is designed to conduct educational and laboratory classes with students on the course "hydraulics" (open and closed riverbeds), as well as to conduct scientific research in the areas of hydromelioration, rational use of water resources, hydraulic engineering, water supply and wastewater disposal.

The existing laboratory building was built in 1951 with the placement of the entire complex of educational and laboratory equipment in one room. However, at present, the educational and scientific laboratory requires reconstruction, restoration of equipment, as well as equipping with more modern educational and laboratory equipment.

The existing laboratory includes:

- 1. Pumps and pumping stations, including advance chambers, suction and pressure pipelines;
- 2. Variable slope hydraulic trays;
- 3. Hydraulic flume with water intake structure (flume with a constant slope);
- 4. Hydraulic Tray High Flow;
- 5. A device for studying laminar and turbulent modes of fluid movement;
- 6. Laboratory Installation for Study of Filtration through Soil Dams
- 7. Model Hydraulic Tray with Variable Slope for Calibration of Various Types of Weirs
- 8. Water Lifting Device Hydraulic Ram
- 9. Device a diagram of the installation for experimental confirmation of the basic equation of hydrostatics and Pascal's law
- 10. Variable and translational discharge system with automatic weir
- 11. Instrument for determining free pressure at different depths

THE MAIN PURPOSE OF strengthening and modernizing the educational and scientific "Branch Laboratory of Hydraulics of Structures, Hydrophysics, Channel Process, Canals and Water Area" is:

Improving the quality of knowledge and potential of the faculty, as well as the formation of professional knowledge and skills among doctoral students, postgraduates, PhDs, masters and bachelors to solve practical problems of integrated assessment in the field of integrated water resources management, by conducting research and experiments in laboratory conditions;

Resumption of laboratory and seminar classes for bachelor's, master's and PhD students in the following specialties: 1-70040101 - Hydraulic engineering; 1-740501 - Land reclamation and water management; 1-74050105 - Integrated use and protection of water resources; 1-740501 - 2602 - Land reclamation and water management, with the development of scenarios for classes in the form of experiments - laboratory work.

Development of practical scientific research with the conduct of appropriate laboratory and field studies in the performance of scientific work.

Development of cooperation in conducting research work.

Initiation of joint projects to conduct scientific research on climate change, new challenges of nature affecting water resources, water use efficiency, etc.

Main tasks:

1. Modernization of the branch laboratory for hydraulics of structures, hydrophysics, channel processes, canals and water areas, in accordance with the prepared defective acts.

GOALS AND OBJECTIVES OF THIS TERMS OF REFERENCE

Goal: Restoration of the equipment installed by the Educational and Scientific Laboratory of Hydraulics of Structures, Hydrophysics, Channel Process, Canals and Water Area to full functioning.

Tasks:

- 1. Carrying out repair, restoration and preventive work for the antechamber, exhaust and pressure pipelines
- 2. Carrying out repair, restoration and preventive work for the Hydraulic Tray with Variable Slope
- 3. Carrying out repair, restoration and preventive works for *the Hydraulic flume with a water intake structure (flume with a constant slope),*
- 4. Carrying out repair, restoration and preventive works for the Hydraulic Flume Bystrotok,
- 5. Carrying out repair, restoration and preventive works *of the Model hydraulic tray with variable slope for calibration of weirs of various types*
- 6. Carrying out repair, restoration and preventive works of the water-lifting device Hydraulic ram
- 7. Carrying out repair, restoration and preventive work for the device a diagram of the installation for experimental confirmation of the basic equation of hydrostatics and Pascal's law
- 8. Carrying out repair, restoration and preventive work of the Device for studying laminar and turbulent modes of fluid movement (sediments and turbidity);
- 9. Carrying out repair, restoration and preventive work on *the plant for determining the water flow rate during alternating and translational emptying with an automatic weir (Darcy)*
- 10. Carrying out repair, restoration and preventive work at the Laboratory Installation for the study of filtration through soil dams
- 11. Carrying out repair, restoration and preventive work for the device for determining free pressure at different depths

2. Terms of Reference/Activities/Tasks

Advance chamber, exhaust and discharge pipelines

In order to ensure the reliability of the pumping station, the laboratories have built a reinforced concrete 21 m3 tank for pumps, which act as an advance chamber, from where it pumps water and supplies it to a permanent metal tank with a capacity of W = 17 m3 through exhaust and pressure pipelines and serves more than 12 equipment and facilities for laboratory work. Technical Parameters Tanks – Advance Chambers: length – L=3.10 m; Bottom width – b = 2.8 m; slope laying m = 0.00; Depth – H. = 2.6 m.

Table 1 - Advance chamber, exhaust and discharge pipelines:

№,	List of repair and restoration works and necessary equipment, devices and spare parts	Unit	Qnty	Note
1	The walls of the water intake basin (with a size of 2.55 x 3.10 x 2.80 m) have cracks,	M ²	40,13	Walls need to be restored
2	There are cracks on the windows of the avant-chamber, which can be repaired with the help of liquid glass	lt	60	Crack repair
3	It is required to screed the surface of the antechamber with a cement-sand mortar with a thickness of 2 mm	M ²	40,3	Carry out screed
4	The surface of the water collection tank (pressure tank), with dimensions of 2000 x 2000 x 4200 mm, is completely corroded,	M ²	16,8	It must be cleaned of corrosion and painted with waterproof blue light paint, type GF- 021;
5	The surface of the pressure tank with dimensions of 2000 x 2000 x 4200 mm is completely corroded	M ²	33,6	It must be cleaned of corrosion and painted with waterproof blue light paint, type GF- 021
6	The metal staircase is in disrepair	М	9	Restore a metal staircase with 45x45mm steel corners measuring 3.20x0.5m
7	The metal ceiling of the antechamber is covered with corrosion	M ²	7,91	Clean from corrosion with a metal brush and sandpaper. Paint with waterproof blue light paint, type GE-021 on both sides

2.1 Variable Slope Hydraulic Tray

A hydraulic flume with a variable slope is used to conduct scientific research in the field of hydraulics of open channels, weirs, spillway and water breaker structures, mechanical equipment of hydraulic structures and other hydraulic processes.

Table 2 - Variable Slope Hydraulic Tray:

№,	List of equipment, devices and spare parts	Unit	Qnty	Notes
1	The metal part of the tray structure is susceptible to corrosion	м ²	6	Paint the metal part of the tray structure with waterproof blue light paint GF-0.21, twice.
2	There is no vertical water gauge rail	Unit	4,0	Installation of vertical water gauge rail steel rust river length 1 m, width 0.10 m
3	There is no vertical piezometer on the hydraulic tray	Unit	4,0	Vertical Piezometer Installation
4	The glass walls of the hydraulic tray need to be replaced	м ²	17	Will replace the glass walls of the hydraulic tray using 8 mm glass
5	Operational metal staircase with wooden- sidewalk requires renovation work	м ²	20,0	Red Light Oil Painting Staircase GF-021
6	0.8×15 m tray bottom needs to be restored	м ²	12,0	Cover the cracks and joints of the bottom of the tray with damp rubber

7	The end of the $0.5 \ge 0.7 \ge 3.4$ m variable slope tray structure is susceptible to corrosion and needs to be painted	м ²	10,2	It is necessary to clean the end of the tray from corrosion and paint with waterproof blue light paint, type GF-021
8	End tarpaulin for liquid flow collection – unusable	M ²	10,2	Replace
9	A tank for collecting the flow and creating a reserve flow in order to ensure the water level in the channel with a size of 4.45 x 1.24 x 1.32 m	M ²	30,2	must be cleaned of corrosion and painted with waterproof blue light paint, type GF- 021
10	Valve diameter Ø50 mm – unusable	Unit	2	Replace
11	1.25 m long piezometric ruler with a diameter of Ø10 mm – none	Unit	1	Need to be purchased and installed
12	Digital Level Sensors – None	Unit	5	Need to be purchased and installed
13	Pitot-Prandtl tubes with digital displays –			Need to be purchased and installed
	none	Unit	4	

2.2 Hydraulic Constant Slope Flume with Water Intake Structure It is intended for scientific research in the field of hydraulics of open streams, weirs, spillway and water breaker structures, hydraulics of mechanical equipment of hydraulic structures, wave hydraulics.

Table 3 - Hydraulic Constant Slope Flume with Water Intake Structure:

№,	List of equipment, devices and spare parts	Unit	Qnty	Notes
1	The metal part of the tray structure with a constant slope (the length of the working part is 11.1 m, the width of the tray is 0.8 m; the height of the tray h is 1.0 m) is subject to corrosion and needs to be painted	M ²	22,2	Clean from corrosion and paint
2	The side transparent glass walls of the tray are not suitable for further use	M ²	22,0	Replacement of 8 mm thick glass tray walls.
3	The bottom of the tray is damaged	kg	10	Cover the bottom of the tray with 10 mm thick raw rubber
4	The water guide tank of the tray with a constant slope (height 1.35; width 1.25 x 1.0 m) is susceptible to corrosion	M ²	15,5	Clean from corrosion and paint
5	Square water-guide tunnels (height 0.6; width 0.6; tunnel length 4.24 m) are susceptible to corrosion	M ²	10,2	Clean from corrosion products and paint
6	Модель водозаборного сооружения требует реконструкции и модернизации	Set	1	Reconstruction and replacement of model parts
7	There are no vertical stainless steel slats with a length of 1 m and a width of 0.10 m	Unit	2	Purchase & Install
8	There is no vertical piezometer with a length of 1 m and a diameter of 10 mm	Unit	1	Purchase & Install
9	The wooden bottom of the tray is unusable	м ²	9,5	Replace with plastic or iron

2.3 Hydraulic Tray – High Flow

A high-speed stream is a well-established drainage channel specially designed for the discharge of surface runoff water at high velocities in a specific location, which is not eroded by the flow. It also has a water wall - a structure that dampens the energy of the flow by dissipating it. To select the type of tray, it is necessary to make a hydraulic calculation to determine the water flow rate from the calculated area, 1/s.

Table 4 - Hydraulic Tray – High Flow:

№,	List of works, equipment and devices for repair and restoration works	Unit	Qnty	Notes
1	Rectangular high-speed tray wall glass is unusable	M ²	30,0	Replace
2	Water-regulating gate valves RU-150 have surface wear and destroyed sealing parts	Unit	4	Renovation Required
3	Tray bottom $(0.8 \times 15 \text{ m})$ needs repair Grouting joints and crevices with raw rubber	kg	10	Grouting of joints and crevices with raw rubber is required
4	The metal part of the tray is susceptible to corrosion	kg	20	Requires cleaning from corrosion and painting with metal paint GF-021
5	The inner surface of the pressure tank (2 x 2 x 4.2 m) is susceptible to corrosion	M ²	36	Requires corrosion cleaning and painting with waterproof paint GF- 0.21
6	The metal part of the tray is susceptible to corrosion.	M ²	7,0	Requires corrosion cleaning and painting with waterproof paint GF- 0.21
7	Vertical steel non-rust rail, length 1 m, width 0.10 m	Unit	7,0	Purchase & Install
8	1 m vertical piezometer with 10 mm diameter	Unit	10	Purchase & Install
9	The wooden service track around the structure 3 x 1 m is unfinished	M ²	3	Complete and combine the wooden service track and paint
10	The metal part of the railing is susceptible to corrosion	kg	12	Paint GF-021

Table 5 - Hydraulic Tray – High Flow:

№, п/н	List of works, equipment and devices for repair and restoration works	Unit	Кол-во	Notes
1	The tank is divided into two parts with	м ³	10	Clean the surfaces of the container from
	dimensions of 08 m x 1.0 m x 1.2 m , all			rust and corrosion and paint all its
	surfaces are covered with corrosion			surfaces
2	The end tank is divided into two parts with	M^2	3	Clean the surfaces of the container from
	a dimension of 0.62 m x 0.76 m x 1.3 m,			rust and corrosion and paint all its
	the surface is covered with corrosion			surfaces
3	Glass pipe for turbulent and laminar	Unit	1	Purchase & Install
	motion with a diameter of \emptyset – 50 mm is			
	destroyed			
4	Valve diameter \emptyset – 50 mm destroyed	М	2	Replace
	Salnii			
5	Nozzle pipe with a diameter of \emptyset – 50 mm	Unit	1	Purchase & Install
	is destroved			
6	Paint dilution tank with dimensions of 0.2	M^2	5	Restore
	m x 0.2 m x 0.2 m; 1 pcs. 0.008 m3			

7	Cast-iron gate valve PN-80 has lost its elastic properties, seal type 4-M8 - oil seal does not provide tightness of the valve interfaces	Unit	1	Repairs need to be made
8	Cast iron gate valve PN-80 is missing	Unit	5	Purchase & Install
9	The water meter is not in working conditionØ 80	Unit	5	Replace
10	Piezometers for nozzles; 10 pcs – noneø 10	Unit	20	Purchase & Install
11	Steel pipe 2.0 m long; The surface of the pipe is corroded Ø 20;	М	5	Clean from corrosion and paint
12	Steel pipe 2.0 m long; The surface of the pipe is corroded Ø 25;	М	10	Clean from corrosion and paint
13	Steel pipe 2.0 m long; The surface of the pipe is corroded \emptyset 32;	М	10	Clean from corrosion and paint

2.4 Reconditioning model tray with variable slope to determine the flow capacity of different types of weirs: thin-walled weir, wide threshold weir, etc. (4 types)

This device is used to carry out 8 laboratory works on hydraulics from among the following: determination of the throughput capacity of weirs of various types, as well as for calibration of weirs of various types (weirs with a thin wall, weirs with a wide threshold; weirs with a wide threshold).

№, п/н	Name of the technological part	Unit	Qnty	Notes
1	0.8 m x 0.6 m x 2.5 m container, susceptible to corrosion	м3	10,0	Paint the exterior surfaces
2	Tray for calibration of weirs (Chippolety, Thomson, Ivanov, rectangular and semicircular cross-section) with a length of 4.0 m; width – 0.27 m; 0.27 m high, completely unsuitable for laboratory experiments			Replace with more modern designs
3	Gate valve RU-50, has lost elastic properties, seal type 4-M8 - oil seals does not ensure tightness of valve interfaces	Unit	5,0	Repairs need to be made;

Table 6 - Reconditioning model tray with variable slope:

2.5 Water Lifting Device – Hydraulic Ram

A hydraulic ram is a water-lifting device in which an increase in pressure is used to supply water with periodically created <u>hydraulic hammers</u>. Hydraulic ramming was known as early as the 18th century. was developed by N. E. Zhukovsky (1907). One of the perfect designs of hydraulic rams was proposed by the Soviet engineer D. I. Trembovelsky (1927).

№ ,	Name of the technological part	Unit	Qnty	Notes
1	gate valve Ru-50; the elastic properties of sealing seals with M6 size have been lost,	fUnit	1	Repairs need to be made
2	hydraulic ram; Ø 50 Needs renovation	Unit	1	disassemble, clean and lubricate the necessary parts and paint the outer surface of the hydraulic ram

2.6 Device - a diagram of the installation for experimental confirmation of the basic equation of hydrostatics and Pascal's law

This laboratory unit is designed to perform laboratory work in all major areas of fluid mechanics. It contains eight fully functional laboratory facilities and stands built on the principles of simulation-numerical modeling of physical processes. Study of filtration in sandy soil at the Darcy plant. The unit is a vertical column of square cross-section made of transparent organic glass, filled with four layers of sandy soil of various sizes and a layer of fine gravel. At the boundaries of the layers there are fittings to which glass piezometers are connected via rubber hoses to measure the heads.

№, п/н	Equipment Name	Unit	Qnty	Notes
1	Vertical quadrangular tank (3.0 m high;	м ²	12	It is necessary to clean the surfaces of
	0.65 m wide, 0.40 m thick), all surfaces			the tank from rust and corrosion and
	are corroded,			paint all its surfaces
2	0.4m x 0.65m Square Vertical Column	M^2	6	Replace
	Clear Organic Glass Needs Replacement			
3	There is no valve diameter Ø 20	Unit	12	Purchase & Install
4	Nozzles to valves for the transition of	Unit	12	Replace with new ones
	rubber nozzles for piezometers, critical			
	mating surfaces are worn, corroded, salnii			
5	are destroyed \emptyset 32	G (1	
5	There is no piezometric display 3.0 x 1.5	Set	1	Needs to be restored
(TT '4	2	
6	Gate valve RU-50,- lost the elastic	Unit	3	Purchase & Install
	properties of the seal type 4-M8 - the off			
	value interfaces, it is necessary to renair:			
7	There is no food tork to mointain a	Ilmit	2	Durchage & Install
/	constant water level above the ground	Unit	3	Furchase & Install
	surface in the model (in order to ensure			
	the steady movement of the filtration			
	flow)			
8	There are no drains connected by a	Set	1	Needs to be restored
Ũ	corrugated rubber hose to the lower part	~~~	-	
	of the column and a cremallier screw.			
	moving along a rack equipped with a scale			
	with centimeter divisions, which are fixed			

	by a locking screw on the drain device in the desired position			
9	Glass (63×152) t = 8 mm not usable	Unit	3	Replace
10	Mesh $(3 \text{ mm} \times 0.4 \text{ m}) \text{ t} = 8 \text{ mm}$ not usable	Unit	3	Replace
11	The structure as a whole needs to be rebuilt	kg	10	Required to be treated with raw rubber
12	Gasket $\emptyset = 50 \text{ mm missing}$	Unit	6	Purchase & Install
13	Pressure gauge 10 atm. Missing	Unit	5	Purchase & Install
14	Pressure gauge 100 atm. Missing	Unit	4	Purchase & Install
15	There are no piezometers	Unit	20	Purchase & Install

2.7 Laminar and Turbulent Fluid Flow Test (Sediment and Turbidity): Restoration of Model Test for Measuring Water Flow Rates at Different Nozzle Cross-Sections (Confusor, Diffuser, Straight Section of Nozzles with Short Length)

Table 9 - Laminar and Turbulent Fluid Flow Test (Sediment and Turbidity):

№,	Name of the technological part	Unit	Qnty	Notes
1	Pressure tank (0.4 m x 0.8 m x 1.0 m) - all surfaces are corroded	M ²	1	it is necessary to clean the surfaces of the tank from rust and corrosion and paint all its surfaces with paint GF-0.21 blue light
2	There is noØ 10 piezometer	Unit	1	Purchase & Install
3	The value \emptyset 32 and the corresponding mating surfaces are worn, corroded, and the seals are destroyed	Unit	1	Replace
4	The value \emptyset 20 and the corresponding mating surfaces are worn, corroded, and the seals are destroyed	Unit	1	Replace
5	The value \emptyset 50 and the corresponding mating surfaces are worn, corroded, and the seals are destroyed	Unit	1	Replace

2.8 Variable and translational discharge system with automatic weir (Darcy)

Determination of resistance along the length in pipelines, in order to determine experimentally the coefficients of Darcy's law λ in the pipeline at different speeds of water movement. Compare (λ) obtained from the experiment with the one calculated by the corresponding formulas.

Table 10 - Variable and translational discharge system with automatic weir (Darcy):

№,	Name of the technological part	Unit	Qnty	Notes					
1	Container with conical nozzle with dimensions of 1.5 x 1.5 x 1.0 m, corroded structures	Unit	2	Need to be cleaned of rust and corrosion and painted					
2	There is no piezometer Ø 10with a height of 1.0 m	Unit	1	Purchase & Install					

3	Atmospheric pressure tank with dimensions of $0.5 \ge 0.1 \ge 0.2 = 0.5 \ge 0.1 \ge 0.2 = 0.5 \ge 0.1 \ge 0.2 \le 0$	Unit	1	Replace
4	Automatic weir tank with dimensions of 0.7 x 0.5 x 0.350 m - be in non-working condition	Unit	1	replace the float, install a piezometer (1 m long with a diameter of 10 mm) and paint the structure
5	The value critical mating surfaces are worn, corroded, and the stuffing box es are destroyed $\emptyset - 20$;	Unit	2	Replace
6	Cast-iron gate valve RU-100; has lost its elastic properties, the seal type 4-M8 - the oil seal does not provide tightness of the interfaces of the valves	Unit	1	Repairs need to be made

2.9 Laboratory Setup for the Study of Filtration Through Ground Plates

The characteristics of the filtration properties of soils are the most important initial data in the design of any pressure hydraulic structure. In this regard, the experimental Darcy device has been improved and a laboratory research method has been developed to determine the main parameters of liquid filtration through various soils in order to predict the occurrence of emergencies at hydraulic structures.

Table 11 - Filtration Through Ground Plates:

Nº,	Name of the technological part	<u>Unit</u> .	Qnty	Notes
1	Tank glass compartments are very outdated	<u>Unit</u>	20	Required to be completely replaced
2	The inner surface of the metal part of the tank is corroded,	M ²	14	Clean from corrosion and paint with waterproof paint type GF-021 silver light with metallic paint
3	The exterior surfaces of the plant and the metal base are susceptible to corrosion	м ²	15	Clean from corrosion and paint blue
4	Glass compartments require sealing	kg	20	Restore with raw rubber
5	The mesh is metal, square, with a size of 0.01 mm, there is no	М	6	Purchase & Install
6	Connecting elastic rubber hoses with a diameter of \emptyset -10 mm and a length of 2.0 m, no	М	20	Purchase & Install
7	Filtration metal meshes with dimensions of 1 mm, - 2 pcs. are not available	<u>Unit</u>	10	Purchase & Install

2.10 Device for determining free pressure at different depths

Measurement of hydrostatic pressure, experimental confirmation of the basic equation of hydrostatics and Pascal's law. More than 9 laboratory works are carried out on this device-design, including: 1. Determination of the shape of a free surface of a cylindrical vessel rotating uniformly around the vertical axis; 2. Investigation of fluid flow modes in a cylindrical pipe, fluid flow in a channel of variable cross-section, calibration of tapering flow meters, etc.

Table 12 - Device for determining free pressure at different depths:

№ ,	Equipment Name	Unit	Qnty	Note
1	Vertical quadrangular tank with dimensions 3.0 m high; 0.4 m wide, 0.65 m thick, internal surface covered with corrosion	М	15	It is necessary to clean the inner surfaces of the tank from rust and corrosion and paint all its surfaces
2	Clear plexiglass for 0.4m x 0.5m square vertical column needs to be replaced	Unit	6	Replace
3	Transparent plexiglass for a vertical square column, width -0.7 ; height -1.55 needs to be replaced	Unit	6	Replace
4	Drain pipe Ø – 100 long – 1 m, absent	М	1	Purchase & Install
5	There is no water control valve with a diameter of $\emptyset - 20 \text{ mm}$	Unit	6	Purchase & Install
6	Water-regulating cast-iron gate valve RU-100 - has lost elastic properties, seal type 4-M8 - oil seal does not ensure tightness of valve interfaces	Unit	3	Repairs need to be made

2. Brief description of the works:

The work is planned at the educational and scientific "Branch Laboratory of Hydraulics of Structures, Hydrophysics, Channel Process, Canals and Water Area" of the Irrigation and Reclamation Faculty of the Tajik Agrarian University named after Sh. Shohtemur in Dushanbe.

NOTE: The supplier is obliged to carry out work in accordance with SNiP (Local regulations and codes) and guarantee the stability and safety of existing equipment after repair and replacement of new parts.

3.1 Environmental Requirements:

- 1. In accordance with the requirements of the legislation in the field of environmental protection, provide and carry out all necessary measures to reduce the impact on the environment.
- 2. Compliance with the requirements of standards for labor protection, industrial safety, environmental safety of work and subsoil protection.
- 3. It is necessary to take into account the requirements of SNiP when planning and carrying out work.

NOTE:

The service provider must provide an estimate and quotation for repairs, the purchase of the required equipment, as well as the cost of installation, commissioning and start-up of all equipment.

3.2 Deliverables and deadlines:

Key results	Deadlines
Carrying out repair, restoration and preventive works of <i>the antechamber, exhaust and pressure pipelines</i>	July 30
Result:	
The advance chamber, exhaust and discharge pipelines have been repaired, tested and fully operational	

Key results	Deadlines
Carrying out repair, restoration and preventive works for the Hydraulic Tray with Variable Slope, the Hydraulic Tray with a Water Intake Structure (Flume with a Constant Slope), and the Hydraulic Tray – Fast Flow,	August 15
Result:	
Variable Slope Hydraulic Trough, Hydraulic Flume with Water Intake Structure (Constant Slope Trough), and Hydraulic Trough – Fast Flow are repaired, tested and fully operational	
Carrying out repair, restoration and preventive work of the Device for studying laminar and turbulent modes of fluid movement (sediments and turbidity); Laboratory Installation for Studying Filtration Through Soil Dams and Model Variable Slope Hydraulic Tray for Calibration of Various Types of Weirs	August 30
Result:	
• Device for studying laminar and turbulent modes of fluid movement (sediments and turbidity); Laboratory Unit for Study Filtration through Soil Dams and Variable Slope Hydraulic Tray Model for Calibrating Various Types of Weirs Repaired, tested and fully operational	
Carrying out repair, restoration and preventive works of the water-lifting device – Hydraulic ram and the device – scheme of the installation for experimental confirmation of the basic equation of hydrostatics and Pascal's law	September 15
Result:	
Hydraulic ram and device – installation diagram for experimental confirmation of the basic equation of hydrostatics and Pascal's law repaired, tested and fully operational	
Carrying out repair, restoration and preventive work on the <i>installation for</i> determining the water flow rate during alternating and progressive emptying with an automatic weir (Darcy) and a device for determining free pressure at different depths	September 30
Result: The Variable and Translational Discharge Water Flow Unit with Automatic Weir (Darcy) and the Depth Free Pressure Tester have been repaired, tested and are fully operational	
Final stage – Handover of completed works Completion of work and transfer of the final result. Verification and acceptance of the entire system	October 15
Result:	
Checking the operation of all laboratory equipment, signing of transfer acceptance certificates	

4.0 Applicant's Work Experience Requirements

- At least 5 years of experience in repair and installation work.
- Experience in procurement of materials and equipment.
- Licensed construction contractors.
- Warranty period of the procured equipment must be at least 12 months.

5. Execution and Reporting Period 5.1 Acceptance of works

- According to the act of work performed. •
- The warranty period is 3 years for all structures. •

5.2 Timing of work

All results must be submitted by October 15, 2024.

BUDGET				
DIRECT LABOR				
			Days	
Position	Name	Rate	(Basis)	Total
Total Direct Labor				
TRAVEL, TRANSPORTATION and PER DIEM				
Description		Rate	Units (Basis)	Total
Total Travel, Transportation & Per Diem				
OTHER DIRECT COSTS				
Description		Rate	Units (Basis)	Total
DBA Insurance (*)		0.75%		
Total Other Direct Costs				
TOTAL COSTS				USD -

Attachment B. BUDGET (See Budget template also in MS Excel).

(*) DBA insurance is to be calculated based on the actual fees/salaries paid to employees or consultants, i.e. it should not include any benefits, indirect costs, or profit fees.

Attachment C.

Technical Proposal Evaluation Criteria:							
Part A - Firm Information (Maximum 5 Points).							
a. Did the offer provide all of the requested information?	5						
Part B - Corporate Capabilities and Past Performance (Maximum 30 Points)							
a. Relevant Corporate Capabilities	5						
b. Does the Offeror have quality and relevant past experience performing							
this type of work and required licenses and certifications?	25						
Part C - Technical Approach (Maximum 35 Points)							
a. Reasonableness of Offeror's approach to complete the task.	15						
b. Are the skills and experience of the proposed personnel applicable to the							
work to be performed under the Statement of Work?							
c. Feasibility of Offeror's proposed implementation timeline.	10						
Technical Developed Freeboother Consister Develope Tetal Conservation 70	70						
Technical Proposal Evaluation Scoring - Possible Total Score 70	70 Marimum						
Financial Proposal Evaluation Criteria:							
Cost Effectiveness (Maximum 30 points)							
a. Comparison with Internal Cost Estimate:	5						
b. Comparison to other bidders' proposals (lowest price ranked maximum							
points, and then derated on a percentage basis downward)	15						
c. Cost realism: feasibility, reasonableness, completeness and allocability?	10						
Financial Proposal Evaluation Scoring - Possible Total Score 30	30						
Possible Total Score - 100	100						

Offeror's response to RFP requirements will be scored based on the below criteria:

Certifications Attachment D - CERTIFICATIONS

The following Certifications are required from Subcontractors prior to issuing a subcontract:

- 1. Certification Regarding Responsibility Matters APR 2010. (FAR Reference 52.209-5).
- 2. Prohibition on Assistance to Drug Traffickers. (22 CFR Part 140).
- 3. Certification Regarding Terrorist Financing. (Implementation of Executive Order 13224).

1. CERTIFICATION REGARDING RESPONSIBILITY MATTERS.

FAR Reference 52.209-5.

As prescribed in 9.104-7(a), insert the following provision:

Certification Regarding Responsibility Matters (APR 2010)

- (a) (1) The Offeror certifies, to the best of its knowledge and belief, that -
 - (i) The Offeror and/or any of its Principals –
 - (A) Are not presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal agency;
 - (B) Have not within a three-year period preceding this offer, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state, or local) contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, violating Federal criminal tax laws, or receiving stolen property; and
 - (C) Are not presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in paragraph (a)(1)(i)(B) of this provision.
 - (D) Have not within a three-year period preceding this offer, been notified of any delinquent Federal taxes in an amount that exceeds \$3,000 for which the liability remains unsatisfied.
 - (1) Federal taxes are considered delinquent if both of the following criteria apply:
 - (i) *The tax liability is finally determined.* The liability is finally determined if it has been assessed. A liability is not finally determined if there is a pending administrative or judicial challenge. In the case of a judicial challenge to the liability, the liability is not finally determined until all judicial appeal rights have been exhausted.
 - (ii) *The taxpayer is delinquent in making payment.* A taxpayer is delinquent if the taxpayer has failed to pay the tax liability when full payment was due and required. A taxpayer is not delinquent in cases where enforced collection action is precluded.
 - (2) Examples.
 - (i) The taxpayer has received a statutory notice of deficiency, under I.R.C. § 6212, which entitles the taxpayer to seek Tax Court review of a proposed tax deficiency. This is not a delinquent tax because it is not a final tax liability. Should the taxpayer seek Tax Court review, this will not be a final tax liability until the taxpayer has exercised all judicial appeal rights.
 - (ii) The IRS has filed a notice of Federal tax lien with respect to an assessed tax liability, and the taxpayer has been issued a notice under I.R.C. § 6320 entitling the taxpayer to request a hearing with the IRS Office of Appeals contesting the lien filing, and to further appeal to the Tax Court if the IRS determines to sustain the lien filing. In the course of the hearing, the taxpayer is entitled to contest the underlying tax liability because the taxpayer has had no prior opportunity to contest the liability. This is not a delinquent tax because it is not a final tax liability. Should the taxpayer seek tax court review, this will not be a final tax liability until the taxpayer has exercised all judicial appeal rights.
 - (iii) The taxpayer has entered into an installment agreement pursuant to I.R.C. § 6159. The taxpayer is making timely payments and is in full compliance with the agreement terms. The taxpayer is not delinquent because the taxpayer is not currently required to make full payment.

- (iv) The taxpayer has filed for bankruptcy protection. The taxpayer is not delinquent because enforced collection action is stayed under 11 U.S.C. 362 (the Bankruptcy Code).
- (ii) The Offeror has not, within a three-year period preceding this offer, had one or more contracts terminated for default by any Federal agency.
- (2) "Principals," for the purposes of this certification, means officers; directors; owners; partners; and, persons having primary management or supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a subsidiary, division, or business segment, and similar positions).

This Certification Concerns a Matter Within the Jurisdiction of an Agency of the United States and the Making of a False, Fictitious, or Fraudulent Certification May Render the Maker Subject to Prosecution Under Section 1001, Title 18, United States Code.

- (b) The Offeror shall provide immediate written notice to the Contracting Officer if, at any time prior to contract award, the Contractor learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
- (c) A certification that any of the items in paragraph (a) of this provision exists will not necessarily result in withholding of an award under this solicitation. However, the certification will be considered in connection with determination of the Offeror's: responsibility. Failure of the Offeror to furnish a certification or provide such additional information as requested by the Contracting Officer may render the Contractor non responsible.
- (d) Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph (a) of this provision. The knowledge and information of an Offeror is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- (e) The certification in paragraph (a) of this provision is a material representation of fact upon which reliance was placed when making award. If it is later determined that the Offeror knowingly rendered an erroneous certification, in addition to other remedies available to the Government, the Contracting Officer may terminate the contract resulting from this solicitation for default.

2. KEY INDIVIDUAL CERTIFICATION NARCOTICS OFFENSES AND DRUG TRAFFICKING

22 CFR Part 140, Prohibition on Assistance to Drug Traffickers.

Note: This certification shall be filled by any key person proposed in the project.

I hereby certify that within the last ten years:

- 1. I have not been convicted of a violation of, or a conspiracy to violate, any law or regulation of the United States or any other country concerning narcotic or psychotropic drugs or other controlled substances.
- 2. I am not and have not been an illicit trafficker in any such drug or controlled substance.
- 3. I am not and have not been a knowing assistor, abettor, conspirator, or colluder with others in the illicit trafficking in any such drug or substance.

NOTICE:

- 1. You are required to sign this Certification under the provisions of 22 CFR Part 140, Prohibition on Assistance to Drug Traffickers. These regulations were issued by the Department of State and require that certain key individuals of organizations must sign this Certification.
- 2. If you make a false Certification you are subject to U.S. criminal prosecution under 18 U.S.C. 1001.
- 3. A false certification from a key person involved in the project, shall result in the termination of his/her contract with the operator.

3. CERTIFICATION REGARDING TERRORIST FINANCING

Implementation of Executive Order 13224

Certification Regarding Terrorist Financing, Implementing Executive Order 13224

(a) The Recipient, to the best of its current knowledge, did not provide, within the previous ten years, and will take all reasonable steps to ensure that it does not and will not knowingly provide, material support or resources to any individual or entity that commits, attempts to commit, advocates, facilitates, or participates in terrorist acts, or has committed, attempted to commit, facilitated, or participated in terrorist acts, as that term is defined in paragraph (c).

- (b) The following steps may enable the Recipient to comply with its obligations under paragraph (a)
 - (1) Before providing any material support or resources to an individual or entity, the Recipient will verify that the individual or entity does not (i) appear on the master list of Specially Designated Nationals and Blocked Persons, which list is maintained by the U.S. Treasury's Office of Foreign Assets Control (OFAC) and is available online at OFAC's website: <u>http://www.treas.gov/offices/eotffc/ofac/sdn/t11sdn.pdf</u>, or (ii) is not included in any supplementary information concerning prohibited individuals or entities that may be provided by USAID to the Recipient.
 - (2) Before providing any material support or resources to an individual or entity, the Recipient also will verify that the individual or entity has not been designated by the United Nations Security (UNSC) sanctions committee established under UNSC Resolution 1267 (1999) (the "1267 Committee") [individuals and entities linked to the Taliban, Usama bin Laden, or the Al Qaida Organization]. To determine whether there has been a published designation of an individual or entity by the 1267 Committee, the Recipient should refer to the consolidated list available online at the Committee's website: http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm.
 - (3) Before providing any material support or resources to an individual or entity, the Recipient will consider all information about that individual or entity of which it is aware and all public information that is reasonably available to it or of which it should be aware.
 - (4) The Recipient also will implement reasonable monitoring and oversight procedures to safeguard against assistance being diverted to support terrorist activity.
- (c) For purposes of this Certification-
 - (1) "Material support and resources" means currency or monetary instruments or financial securities, financial services, lodging, training, expert advice or assistance, safehouses, false documentation or identification, communications equipment, facilities, weapons, lethal substances, explosives, personnel, transportation, and other physical assets, except medicine or religious materials."
 - (2) "Terrorist act" means-
 - (i) an act prohibited pursuant to one of the 12 United Nations Conventions and Protocols related to terrorism (see UN terrorism conventions Internet site: <u>http://untreaty.un.org/English/Terrorism.asp</u>); or
 - (ii) an act of premeditated, politically motivated violence perpetrated against noncombatant targets by subnational groups or clandestine agents; or
 - (iii) any other act intended to cause death or serious bodily injury to a civilian, or to any other person not taking an active part in hostilities in a situation of armed conflict, when the purpose of such act, by its nature or context, is to intimidate a population, or to compel a government or an international organization to do or to abstain from doing any act.
 - (3) "Entity" means a partnership, association, corporation, or other organization, group or subgroup.
 - (4) References in this Certification to the provision of material support and resources shall not be deemed to include the furnishing of USAID funds or USAID-financed commodities to the ultimate beneficiaries of USAID assistance, such as recipients of food, medical care, micro-enterprise loans, shelter, etc., unless the Recipient has reason to believe that one or more of these beneficiaries commits, attempts to commit, advocates, facilitates, or participates in terrorist acts, or has committed, attempted to commit, facilitated or participated in terrorist acts.

(5) The Recipient's obligations under paragraph (a) are not applicable to the procurement of goods and/or services by the Recipient that are acquired in the ordinary course of business through contract or purchase, e.g., utilities, rents, office supplies, gasoline, etc., unless the Recipient has reason to believe that a vendor or supplier of such goods and services commits, attempts to commit, advocates, facilitates, or participates in terrorist acts, or has committed, attempted to commit, facilitated or participated in terrorist acts.

This certification is an express term and condition of the agreement and any violation of it shall be grounds for unilateral termination of the agreement by USAID prior to the end of its term."

SIGNATURE

By signature hereon, or on an offer incorporating these Representations, Certifications, and Other Statements of Offerors, the Contractor certifies that they are accurate, current, and complete, and that the Contractor is aware of the penalty prescribed in 18 U.S.C. 1001 for making false statements in offers.

By signing below the subcontractor provides certifications for:

- 1. Certification Regarding Responsibility Matters APR 2010. (FAR Reference 52.209-5),
- 2. Prohibition on Assistance to Drug Traffickers. (22 CFR Part 140),
- 3. Certification Regarding Terrorist Financing. (Implementation of Executive Order 13224)

Offeror's Name:_____

Legal Representative Name and Title:

Signature:	Date:
0	

Attachment E Technical Specifications

SPECIFICATIONS. EQUIPMENT OF EDUCATIONAL AND SCIENTIFIC "BRANCH LABORATORY OF HYDRAULIC STRUCTURES, HYDROPHYSICS, CHANNEL PROCESS, CHANNELS AND WATER AREA"

Pumps #1 and #2

Marks	Flow rate (nominal), m³/h	Head, m	Pump inlet pressure, kgf/cm², max.	Motor power, kW	Speed, rpm	Rotational speed, c~s	Pump efficiency, %	Mains voltages, V	Current frequency, Hz	Type of current	Permissible cavitation reserve, m, not more than
KM 100-65-200a	90	40	6	22	2900	48	66	380	50	variable	4.5
KM 100-80-160b	80	20	6	7.5	2900	48	71	380	50	variable	4.5

Pumps #3

Unit name	Nominal flow	flow Nominal /h head, m	Work area		Kavit,	Electric	Electric motor		Overall dimensions of the unit, mm			e Diameter of spigots, mm		Pump	Unit
	rate, m³/h		flow rate, m³/h	head, m	м	brand	kW	rpm	L	В	Н	inlet	exit	weight, kg	weight, kg
CNS(d) 38-132	38	132	2848	100153	3,6	AIR 180M2	30	3000	1820	440	610	80	80	303	538

Pumps #4 and #5

Unit name	Nominal flow rate, m³/h	Nominal. Head, m	Work area		Cavitation reserve, m	Electric motor		Overall dimensions of the unit, mm			Diameter of spigots, mm		Unit weight, kg	
			flow rate, m³/h	head, m		brand	kW	rpm	L	В	Н	inlet	exit	
KM 80-65-160	50	32	3560	2934	4,0	AIR 112M2 LCD	7,5	3000	635	265	368	80	65	93
KM 80-65-160	50	32	3560	2934	4,0	AIR 112M2 LCD	7,5	3000	635	265	368	80	65	93

Control busbars pumps and pumping stations

Control panel 10 kW

Power	10 kW	30 kW		
Voltage	380/400V (220V - 690V)	380/400V (220V - 690V)		
Type of control	Direct start/start-stop (to order: PSO, PSC)	Direct start/start-stop (to order: PSO, PSC)		
Number of inputs	One to order and more	One to order and more		
Series	ShchU to order etc.	ShchU to order etc.		
Degree of protection	IP31 to order etc.	IP31 to order etc.		
Manufacturer	Russia France Finland Denmark	Russia France Finland Denmark		
Additional description	see below photo."	see below photo."		
Quantity, pcs.	3 pieces	2 pieces.		



Technical data Pump unit control panel for 10 kW

Input parameters					
Control system capacity	10 kW				
Number of controlled/connected	One (on order and mans)				
motors/pumps/ventilation systems, etc.	One (on order and more)				
Type of control/regulation	Direct start/manual/START/STOP - with Direct start (optional: soft start, with PSC, with VFD, with VFD)				
Network type	Three-phase				
Input voltage	0.4 kV (on demand: 0.23 kV, 0.36 kV, 0.38 kV, 0.				
	4 kV, 0.44 kV, 0.50 kV, 0.52 kV, 0.69 kV)				
Input voltage operating range	3f x 200-440 (extended range on request)				
Input voltage limit range	3f x 200-440 (extended range on request)				
Input voltage frequency	50/60 Hz ± 2%				
Output parameters					
Operating range of output voltage	3f x 200-440 (extended range on request)				
cos F	0.8-0.98				
Control system range, %	0-100				
Output frequency, Hz	50/60 (to order: 0-400 (U/f))				
Regulatory principle	discrete				
Current for cable selection	according to the selection scheme on request				
Supply cable	Copper				
Control board	Switching contactor DEKraft (Russia) - in a complete set Direct start Under the order: Danfoss (Denmark/Finland), Schneider Electric (France), Instart (Russia), ESQ (Korea / PRC), ABB (Sweden), Hummai (Korea) and others				
Permissible load variation range	0-100%				
Overload, % for 1 minute	(custom: 150%)				
Acceleration time, s	Instantaneous/direct (to order with PSU/FPSO: 1-20, 1-3600s)				
Braking time, s	Instantaneous/direct (to order with PSU/FPSO: 1-20, 1-3600s)				
Service functions					
Automatic regulation	Not susilable - in the FULL START configuration (on order with PSU/PED)				
Manual control	Ver				
Time relay, timer	On request - in the FULL START configuration (completed in the DSO(DDD)				
Display of basic parameters	Vox				
Network protocols	Optional (to order: BACnet MSTP, FC Protocol, N2 Metasys, FLN Apogee, Modbus RTU (RS				
Overvoltage protection	Yes				
Overcurrent protection	Yes				
Vector control with feedback	Optional (to order)				
Touchless vector control	Optional (to order)				
Remote/external control panel	Optional (to order)				
EMC filter	Optional (to order)				
Structural design	• • • •				
	Circuit breaker DEKraft (Russia) - in a set of Direct start Under the order with a control panel /				
Input device, protection	PFC: Schneider Electric (France), ABB (Sweden), Lovato (Italy), etc.				
Commutation	(Sweden), Lovato (Italy), etc.				
Microprocessor controller	(Denmark/Finland), Schneider Electric (France), Hyundai (Korea) and others.				
Network connection	terminal block				
Ventilation	natural (forced on request)				
Heating	Optional (to order)				
Operating temperature	0°C to +50 °C				
Storage temperature	-25°C to +65°C				
Relative humidity	up to 95%				
Installation	indoor placement (optional outdoor placement)				
Enclosure/cabinet color	powder coating RAL 7035 (light gray)				
Type of cabinet mounting	hinged/floor mounted				
Cable entry	top/bottom				
Climatic version	U3 (to order: 01, 02, UHL, UHL1, UHL2, UHL3, UHL4, UHL5)				
Degree of protection	IP31 (Available to order: IP00, IP20, IP21, IP30, IP44, IP54, container up to -60t. etc.)				
Warranty	from 12/18/24/36/60 months (depending on equipment)				
Weight	max. AD Kg				
Dimensions (HXWXH)	500x400x220mm (To order: assembling the cabinet to the customer's dimensions)				
Technical data Pump unit con	ntrol panel for 30 kW				

Input parameters

Control system capacity	30 kW				
Number of motors/pumps/ventilation systems to					
be controlled/connected, etc.	One (on order and more)				
Type of control/regulation	Direct start/manual/START/STOP - with Direct start (optional: soft start, with PSC, with VFD, with VFD)				
Network type	Three-phase				
Input voltage	0.4 kV (on demand: 0.23 kV, 0.36 kV, 0.38 kV, 0.				
	4 kV, 0.44 kV, 0.50 kV, 0.52 kV, 0.69 kV)				
Input voltage operating range	3f x 200-440 (extended range on request)				
Input voltage limit range	3f x 200-440 (extended range on request)				
Input voltage frequency	50/60 Hz ± 2%				
Output parameters					
Operating range of output voltage	3f x 200-440 (extended range on request)				
cos F	0,8-0,98				
Control system range, %	0-100				
Output frequency, Hz	50/60 (to order: 0-400 (U/f))				
Regulatory principle	discrete				
Current for cable selection	according to the selection scheme on request				
Supply cable	Copper				
Control board	Switching contactor DEKraft (Russia) - in a complete set Direct start Under the order: Danfoss (Denmark/Finland), Schneider Electric (France), Instart (Russia), FSO (Kores (DRC), ABB (Sureden), Humdai (Kores) and others				
Dermissible load variation range	0.100%				
Overload % for 1 minute	(custom: 150%)				
Acceleration time s	Instantaneous/direct (to order with DSIL/EDSO: 1-20, 1-3600s)				
Braking time a	Instantaneous/direct (to order with PSU/FPSO: 1-20, 1-3600s)				
Service functions	Intelligible of the warroorroo. 1-20, 1-50005/				
Automatic regulation	Not available - in the FULL START configuration (on order with PSU/PFD)				
Manual control	Yes				
Time relay, timer	On request - in the FULL START configuration (completed in the PSO/PPP)				
Display of basic parameters	Yes				
Network protocols	Optional (to order: BACnet MSTP, FC Protocol, N2 Metasys, FLN Apogee, Modbus RTU (RS 485)				
Overvoltage protection	Yes				
Overcurrent protection	Yes				
Vector control with feedback	Optional (to order)				
Touchless vector control	Optional (to order)				
Remote/external control panel	Optional (to order)				
EMC filter	Optional (to order)				
Structural design					
Input device, protection	Circuit breaker DEKraft (Russia) - in a set of Direct start Under the order with a control panel / PFC: Schneider Electric (France), ABB (Sweden), Lovato (Italy), etc.				
Commutation	DEKraft (Russia) to order: Schneider Electric (France), Instart (Russia), ESQ				
Commutation	(Korea/PRC) ABB (Sweden), Lovato (Italy), etc.				
Microprocessor controller	Switching contactor DEKraft (Russia) - in a set of direct start Under the order: Danfoss (Denmark/Finland), Schneider Electric (France), Hyundai (Korea) and others.				
Network connection	terminal block				
Ventilation	natural (forced on request)				
Heating	Optional (to order)				
Operating temperature	0°C to +50 °C				
Storage temperature	-25°C to +65°C				
Relative humidity	up to 95%				
Installation	indoor placement (optional outdoor placement)				
Enclosure/cabinet color	powder coating RAL 7035 (light gray)				
Type of cabinet mounting	hinged'floor mounted				
Cable entry	top/bottom				
Climatic version	U3 (to order: U1, U2, UHL, UHL1, UHL2, UHL3, UHL4, UHL5)				
Degree of protection	IP31 (Available to order: IP00, IP20, IP21, IP30, IP44, IP54, container up to -60t. etc.)				
Warranty	from 12/18/24/36/60 months (depending on equipment)				
Weight, kg	max. 75 kg				
Overall dimensions, mm (HxWxH)	650x500x220mm (To order: assembling the cabinet to the customer's dimensions)				

Power distribution cabinets (PDC)



Power	400 A		
Voltage	380/400V (220V - 690V)		
Type of control	Direct start/start-stop (to order: PSO, PSC)		
Number of inputs	3 pieces		
Series	SDC 400 A V.00		
Degree of protection	IP31 to order etc.		
Manufacturer	Russia France Finland Denmark		
Additional description	see below photo."		
Quantity, pcs.	3 pieces		