

REQUEST FOR EXPRESSION OF INTEREST FOR PROVISION OF LABORATORY TEST SERVICE

REFERENCE NO.: CPP-PROC-UG-055-1012-C2

China Petroleum Pipeline Engineering Co., Ltd. (hereinafter abbreviated as CPP) as Pipeline, Feederline & Above Ground Installation Contractor for the East African Crude Oil Pipeline (EACOP) Project invites experienced and reputable Contractors to express their interest in providing **laboratory test service** to the EACOP Project.

The EACOP Project involves the construction and operation of an underground and cross-border pipeline to transport crude oil for export to international markets. The pipeline will run from Kabaale, Hoima District in Uganda to the Chongoleani peninsula near Tanga in Tanzania. The length of the pipeline is 1,443 km, of which 296 km will be in Uganda.

BRIEF DESCRIPTION OF THE SCOPE OF THE SERVICES:

- ♦ Laboratory test service include civil material testing, coating sampling test, welding coupon mechanical test, instrument calibration, NDT equipment & instrument calibration etc. Please find attached (Appendix 4,5,6,7,8) for more details.

MINIMUM REQUIREMENTS:

Companies or organizations expressing their interest are invited to document their request with:

- Proof of business registration and business license for Uganda.
- Proof of registration with the Uganda Tax Revenue Authority.
- Proof of registration with the National Supplier Database (NSD) for Uganda.
- Compliance with the Petroleum Midstream National Content Regulation # 34,2016 for Uganda.
- Fully filled Key personnel list with CV (Appendix 1) in requested format. (Blank is regarded as an unqualified item.)
- Proof of registration with the Engineers Registration Board (ERB).
- Similar supplying experience within the last three years (Appendix 2) in the requested format.
- Copy of certificates of ISO 9001, ISO 45001, ISO 14001, ISO 17025 accreditation (Mandatory) or equivalent of them.
- Deliver the services in 2 weeks after signing the contract.
- Tax Clearance Certificate for the latest year available.

This is a complicated EOI, the participator needs to submit the dossier and Appendix 3 according to which test service you are interested.

Companies which have the ability, capacity, and resources to implement the activities listed above should express their interest by sending together with the documents stated in the above section through an email to **supplierdata@cpptz.com** (Max. Email Size: 20 MBs, all documents must be submitted in the **English language**) on or before **24:00 hours East African Time (EAT), on 12th November 2023**. **The subject of the email should be "EOI for CPP-PROC-UG-055-1012-C2-COMPANY NAME"**. **CPP reserves the right not to consider companies that submit an incorrect email subject and the incorrect format of Appendix 1, 2, 3, 4, 5, 6, 7 and 8.**

The **format** of the required documents and **relevant technical requirements** which are mentioned in Minimum Requirements should be **downloaded from EACOP's website**

(<https://eacop.com/opportunities-by-main-construction-contractors/china-petroleum-pipeline-engineering-co-ltd/>).

Note: CPP will review and assess the documents provided by companies that have expressed interest in accordance with this EOI and conduct evaluations based on internal criteria to determine which companies will be included in the list of pre-qualified companies. Only the pre-qualified companies will receive, by signing a Non-Disclosure Agreement (NDA), an invitation to bid as a continuation of the call for tender process. CPP reserves the right at its sole discretion to make the



decision to select or reject a company and maintain its decision.



APPENDIX 3 Lab Equipment & Instruments Register

S/N	Description	Picture of Sample
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APPENDIX 4 Civil Material Test List

A	FIELD TESTING AND VISIT CHARGES	Standards Requirement
1	Sampling freshly mixed concrete	ASTM C 172
2	Temperature of freshly mixed concrete	ASTM C 1064
3	Slump test of freshly mixed concrete	ASTM C 143
4	Air content of fresh concrete	ASTM C 231
5	Unit weight of fresh concrete	ASTM C 231
6	Making concrete cylinders/motor/grout specimen(Max.1 hour for one set)	ASTM C-31/109
7	Sampling of aggregate/soil	ASTM D 75
8	In-situ density test,(minimum 5 test shall be charged at each visit)	ASTM D 6938
9	Non-productive waiting time due to client related reason	
10	Mobilization and De-mobilization of crew for field testing and collection of samples	
B SOIL TESTING		
1	Grading/Sieve analysis	BS 1377-2/BS EN ISO 14688-2
2	Classification of soil	ASTM D 2487
3	Classification of soil	ASTM D 3282
4	Specific gravity of soil	ASTM D 854
5	Atterberg Limits	BS 1377-2
6	Compaction Test - BS Heavy-4.5kg rammer method.	BS 1377:Part 4:1990
7	Chloride Content	BS EN 1744-1
8	Water soluble sulphate content(mg/kg)	BS 1377-3
9	Organic matter content, %	BS 1377-1 & 3
10	Relative density by vibratory table	ASTM D 4253/4254
11	Effective angle of internal friction ϕ' and Effective Cohesion	BS 1377-7
12	Dynamic Cone Penetrometer Test (In-situ CBR%)	BS 1377-9
13	California Bearing Ratio.3 points test (CBR)	BS 1377-4
14	Undrained shear strength of remolded material, kPa (Effective angle of internal friction ϕ' , Effective cohesion c' , kPa)	BS 1377-9 (field) /BS 1377-7 (laboratory)
15	Field density test by Sand Replacement Method	Adopted by 3rd Party Laboratory, Refer to MWOt general specifications
16	Field density test by Sand Replacement by nuclear methods	Adopted by 3rd Party Laboratory, Refer to MWOt general specifications
C CONCRETE TESTING		
1	Sampling/Making Concrete cubes	EN 12390-1 to 8.
2	Slump Test for Workability	ASTM C 617
3	Provision of a temporary Curing Tank equipped with a temperature gauge	Relevant Standard
4	Compressive strength of concrete cubes	EN 12390-1 to 8.
5	Compressive strength of concrete blocks	ASTM C 140
6	Concrete Mix design Trials(Each Concrete Class)	Standard method
7	Bitumen coating test (DFT) on buried concrete	ASTM D-1005/BS 8102
8	Schmidt Rebound Hammer test (10 point each test)	ASTM C 805
9	Temperature of fresh concrete	EN 206
10	Chloride content	EN 480-10
D AGGREGATE TESTING (Fine and Coarse Aggregates as found applicable)		
1	Magnesium Sulphate Soundness, % 5 cycles	ASTM D5240
2	Sieve analysis/Grading	BS EN 12620+A1
3	Petrographic Examination	Absence of weakness or materials that could result in significant stone alteration and reduction in durability.
4	Specific gravity and absorption	ASTM C 127/128 or BS EN 1097-6 as found applicable
5	Soundness	ASTM C 88
6	Degradation	ASTM D3744
7	Los Angeles Abrasion, % (1000 revolutions)	ASTM C535

8	Flakiness and Elongation	BS 812
9	Nominal Size, D50 (visual inspection by a qualified engineering geologist or geotechnical engineer)	-
10	Water absorption test	BS EN 1097-6
11	Ten percent fines value (TFV) test	BS 812-111
12	Chloride Content.	Available relevant BS or ASTM
13	Sulphate (Sulfate) Content	Available relevant BS or ASTM
14	Silt, Clay and Dust Content	Available relevant BS or ASTM
15	Organic Impurities (Fine Aggregate Only).	Available relevant BS or ASTM
E WATER FOR CONSTRUCTION		
1	All Tests in accordance with methods/requirements in BS EN 1008	BS EN 1008
F GEOTEXTILE TESTING		
1	Tensile Strength, kN/m (MD/CMD)	EN ISO 10319
2	Elongation at maximum load, % (MD/CMD)	EN ISO 10319
3	Penetration resistance, N (Static Penetration Test)	EN ISO 12236
4	Fall cone test, mm	EN ISO 13433
5	Equivalent mesh size (O90), mm	EN ISO 12956
6	Permeability (H50), l/m ² .s	EN ISO 11058
G STEEL REINFORCEMENT		
1	Characteristic Yield Strength	BS EN 10080 or BS 4449+A3
H CEMENTIOUS AND EPOXY GROUT		
1	Cementious grout: Compressive Strength	ASTM C1107/C1107M
2	Epoxy Grout Compressive strength	ASTM C579
3	Epoxy grout: Flexural strength	ASTM C580
4	Epoxy grout: Tensile strength	ASTM C307
F PRELIMINARIES		
1	Provision of 3 Laboratory Engineers	
2	Provision of Laboratory Equipment	

APPENDIX 5 Coating Sampling Test List

	FIELD TESTING AND VISIT CHARGES	Standards Requirement
A	PPL-Field joint Coating	
1	Impact Resistance	ISO 21809-3
2	Cathodic Disbondment (48 hours)	ISO 21809-3
B	PPL-Field joint HDPE (PE100) outer casing	
1	Melt mass flow rate (MFR)	ISO 1133-1
2	Density	ISO 1183
3	Carbon black content	ISO 6964
4	Thermal Stability (OIT)	ISO 11357-6
5	Hardness	ISO 868
C	PPL-Field joint POLYURETHANE FOAM (PUF)	
1	Foam density	ISO 845
2	Voids and bubbles	EN 253:2019
3	Closed cell content	ISO 4590
4	Cell size	EN 489:2009

APPENDIX 6 Welding Coupon Sampling Test List

	Welding Coupon Mechanical Test	Standards Requirement
1	Tensile Strength	ISO 6892-1-2019
2	Bending Test	ISO 7438:2020
3	Charpy-V Notch Impact Test	ISO 14556:2015
4	Hardness Test	ASTM E18-22
5	Marco Test	ASME B31.4-8
6	EDX & SEM	ASTM F1375-92
7	Welding Metal tensile	ISO 6892-1-2019

APPENDIX 7 Instrument Calibration List

SN.	Item Description	Discipline	Reference Calibration Method
1	Multi meter	Welding/Electrical/Instrument	EURAMET CALIBRATION GUIDE 15 VERSION 3.0
2	CO2 Gas Gauge	Welding	DKD- R 6-1
3	Argon Gas Gauge	Welding	DKD- R 6-1
4	Combination Gas Gauge	Welding	DKD- R 6-1
5	Infrared Thermometer	Welding	ASTM E2847
6	Ampere Meter-Electrode drying box	Welding	ISO1766:2016
7	Volt Meter -Electrode drying box	Welding	ISO1766:2016
8	Temperature Gauge (Electrode drying box)	Welding	EURAMET CALIBRATION GUIDE 11 VERSION 2.0
9	Infrared Thermometer	Welding	ASTM E2847
10	Anemometer	Welding	EURAMET CALIBRATION GUIDE 25 VERSION 1.0
11	Welding Inspection Ruler	Welding	ISO1766:2016
12	Vernier caliper	Welding	ISO 6906
13	High-Low gauge	Welding	ISO6906
14	Digital Thermo-Hygrometer	Welding/Coating	NIST S.O.P 49
15	Quiver	Welding	ISO1766:2016
16	Oven	Welding	EURAMET CALIBRATION GUIDE 20 VERSION 5.0
17	Welding Parameter Recorder (High Frequency Sample Device)	Welding	ISO1766:2016
18	Degauss Apparatus	Welding	ISO1766:2016
19	Earth Resistance Tester	Welding	KET/TSP/GS/01, Based on ISO16664:2017
20	Portable Gas Detector	Welding	KET/TSP/GS/01, Based on ISO16664:2018
21	Tensometer for weld stress crack resistance test (Lab)	Welding	ISO1766:2016
22	Auto Level (level gauge)	Survey	ISO17123:2012
23	Theodolite	Survey	ISO17123:2013
24	GPS	Survey	ISO17123:2014
25	Total Station	Survey	ISO17123:2015
26	Dew Point Meter	Coating/Hydro- test	NIST S.O.P 49
27	Profile Gauge	Coating	ASTM D7091
28	Temperature & Humidity Meter	Coating	NIST S.O.P 49
29	Coating Thickness Gauge (DFT Gauge)	Coating	ASTM D7091
30	Pressure Gauge (Includes Pressure Gauge on the Equipment)	Coating/Hydro- test	DKD- R 6-1
31	Pressure Relief Valve	Coating/Hydro- test	DKD- R 6-1
32	Needle Pressure Gauge	Coating	DKD- R 6-1
33	Air Compressor	Coating	DKD- R 6-1
34	Orifice Gauge	Coating	Manufacturer Instructions based on ISO4518 requirements
35	Breath Box	Coating	-
36	Contact Pyrometer	Coating	ASTME2847
37	Holiday Detect Device	Coating	ASTMG62-14
38	Voltmeter for setting holiday voltage.	Coating	EURAMET CALIBRATION GUIDE 15 VERSION 3.0
39	Salt Contaminant Measure Device	Coating	ISO 8502-6/9
40	Cross Cut Equipment	Coating	ISO2409
41	Hydraulic Adhesion Test Equipment	Coating	DKD- R 6-1
42	Abrasive conductivity meter	Coating	ASTM D4940-98
43	Dial thickness gauge for testex	Coating	ASTM D7091
44	Durometer	Coating	ASTM D2240
45	Balance for ratio check.	Coating	EURAMET CALIBRATION GUIDE 18 V4.0
46	Weight for impact test	Coating	OIML R111
47	Cathodic Disbondment test equipment	Coating (Lab)	Manufacturer Instructions based on ASTMA775
48	DSC for glass transition and oxidation induction	Coating (Lab)	Manufacturer Instructions based on ISO11357:1999
49	Temperature sensors for polyol and iso.	Coating	EURAMET CALIBRATION GUIDE 11 VERSION 2.0
50	Balance for mix ratio.	Coating	EURAMET CALIBRATION GUIDE 18 V4.0
51	PUF flow meter.	Coating	ISO 12242:2021
52	Pycnometer for closed cell content.	Coating (Lab)	Manufacturer Instructions based on ISO4518 requirements
53	Heat flow meter for thermal conductivity.	Coating (Lab)	ISO 12242:2021
54	Compressive strength load cell	Coating (Lab)	ASTM E4
55	Torque wrench for HDPE welding bands.	Coating	EN ISO6789:2017
56	Cell size measuring equipment	Coating	Manufacturer Instructions based on ISO4518 requirements
57	Thermocouples used for FJ testing	Coating	EURAMET CALIBRATION GUIDE 8 V3.0
58	Dead Weight Tester	Hydro-test	EURAMET CALIBRATION GUIDE 3
59	Pressure Chart Recorder	Hydro-test	DKD- R 6-1
60	Temperature Chart Recorder	Hydro-test	EURAMET CALIBRATION GUIDE 11 VERSION 2.0
61	Flow Meter	Hydro-test	ISO 12242:2021
62	Displacement Meter	Hydro-test	ASTM D4940-98
63	Hydraulic Pump	Hydro-test	DKD- R 6-1
64	Digital Insulation Tester	CP	ASTM D2865-01
65	Decade Resistance Box	CP	EURAMET CALIBRATION GUIDE 15 VERSION 3.0
66	Cable Locator (RD)	CP	EURAMET CALIBRATION GUIDE 15 VERSION 3.0
67	Digital Earth Tester	CP	EURAMET CALIBRATION GUIDE 15 VERSION 3.0
68	Pipeline Current Mapper	CP	Manufacturer instructions based on ASTM standard
69	Micrometer Caliper	Mechanical	ISO6906
70	Auto Angel Meter	Mechanical	Manufacturer instructions based on ASTM D5725-99
71	Audi Gauge	Mechanical	Manufacturer instructions based on ASTM standard
72	Torque Wrench	Mechanical	EN ISO6789:2017
73	Hydraulic Torque Wrench	Mechanical	EN ISO6789:2018
74	Megohm meter	Electrical	EURAMET CALIBRATION GUIDE 15 VERSION 3.0
75	GND- Resistance Tester	Electrical	EURAMET CALIBRATION GUIDE 15 VERSION 3.0
76	DC Leakage Tester	Electrical	ASM-D257
77	Transformer DC Resistance Tester	Electrical	EURAMET CALIBRATION GUIDE 15 VERSION 3.0
78	AC Withstand Voltage Tester	Electrical	EURAMET CALIBRATION GUIDE 15 VERSION 3.0
79	Megger	Instrument	EURAMET CALIBRATION GUIDE 15 VERSION 3.0

80	Earthing Megger	Instrument	EURAMET CALIBRATION GUIDE 15 VERSION 3.0
81	The fluke 744 Documenting Process Calibrator	Instrument	EURAMET CALIBRATION GUIDE 15 VERSION 3.1
82	Digital Pressure Gauge	Instrument	DKD- R 6-1
83	Milliamp Process Clamp Meter	Instrument	EURAMET CALIBRATION GUIDE 15 VERSION 3.0
84	Pressure Comparator	Instrument	DKD- R 6-1
85	Pressure Transmitter	Instrument	DKD- R 6-1
86	Temperature Gauge	Instrument	EURAMET CALIBRATION GUIDE 11 VERSION 2.0
87	Temperature Transmitter	Instrument	EURAMET CALIBRATION GUIDE 11 VERSION 2.0
88	LEL Gas Detector	Instrument	KET/TSP/GS/01, Based on ISO16664:2017
89	Optical Time Domain Reflectometer (OTDR)	Communication	Manufacturer Instruction based on ISO/IEC14763-3:2014 Part3
90	FOC Fusion Splice Machine	Communication	US6294760B1
91	Optical Power Meter	Communication	IEC61315
92	O2 Gas Detector	Pre-Commission	KET/TSP/GS/01, Based on ISO16664:2017
93	Combustible Gas Detector	Pre-Commission	KET/TSP/GS/01, Based on ISO16664:2018
94	H2S Gas Detector	Pre-Commission	KET/TSP/GS/01, Based on ISO16664:2019

APPENDIX 8 NDT equipment & instrument calibration List

NDT equipment & instrument calibration List	
1	Ultrasonic Testing Instrument
2	High-frequency Directional X-RAY Machine
3	Directional X-RAY Machine
4	Circumferential X-RAY Machine
5	X-RAY Crawler
6	X-RAY Crawler Head
7	Film Viewer
8	Density Meter
9	Magnetic Particle Testing Equipment
10	Magnetometer
11	Magnetic Field Indicator
12	Illuminance Meter
13	Film Scan
14	PAUT+TOFD Equipment
15	Film Developer
16	Basic Radiation Safety Instrument
17	TOFD detector