DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

MINISTRY OF ENERGY

CEYLON PETROLEUM STORAGE TERMINALS LIMITED

PROCUREMENT DOCUMENT

FOR

PROCUREMENT, CONSTRUCTION AND COMMISSIONING OF 2 NOS. 15,000 m^3 AND 1 NO. 10,000 m^3 STORAGE TANKS AT MUTHURAJAWELA TERMINAL

CONTRACT NO: KPR/01/2026

Employer:

Ceylon Petroleum Storage Terminals Limited,
Oil Installation,
Kolonnawa,
Wellampitiya,
Sri Lanka.

Issued to: …….

Issued by: ……..…….

Date: ……

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Invitation for Bids (IFB)

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF ENERGY
CEYLON PETROLEUM STORAGE TERMINALS LIMITED

PROCUREMENT, CONSTRUCTION AND COMMISSIONING OF 2 NOS. 15,000 m^3 AND 1 NO. 10,000 m^3 STORAGE TANKS AND ASSOCIATED FACILITIES AT MUTHURAJAWELA TERMINAL

CONTRACT NO: KPR/01/2026

INTERNATIONAL COMPETITIVE BIDDING

1. The Chairman, High Level Procurement Committee (HLPC) on behalf of the Ceylon Petroleum Storage Terminals Limited, Oil Installation, Kolonnawa, Wellampitiya, Sri Lanka now invites sealed bids from eligible and qualified bidders for "**Procurement, Construction and Commissioning of 2 Nos. 15,000 m^3 and 1 No. 10,000 m^3 Storage Tanks and Associated Facilities at Muthurajawela Terminal"** as described below and estimated to a cost of LKR 3496 million.

2. The scope of work consists of the reviewing CPSTL provided engineering design, Submit Design Review Report and preparation of detailed construction drawings; supply of all equipment and materials; construction, installation, and inspection; mechanical testing; internal and external painting and obtaining third-party inspector approval for the commissioning of two (2) vertical above-ground atmospheric storage tanks (15,000 m^3 each for Diesel) and one (1) vertical above-ground atmospheric storage tank (10,000 m^3 for Petrol), all designed and constructed in compliance with API Standard 650 (Twelfth Edition, March 2013).

   The scope also encompasses piling works, RCC raft foundations, cathodic protection systems, road network development, dyke construction, Drain Pits, Intermediate oily water Manholes, Valve pits, culverts, Valves, Construction and Integration of Petroleum product, Fire water, Oily water and storm water piping systems with existing piping systems, Construction and Integration of fire detection and Suppression systems, lighting, cabling, electrical and instrumentation systems with existing systems, Integration of new installations with existing automation and SCADA systems, and all other associated engineering works required for the complete and functional installation of the storage tanks and related infrastructure.

   All activities shall be executed in accordance with API, ASME, BS, NFPA, AWS and other applicable industry standards, safety regulations, and quality assurance requirements.

Tank No.	**A**	**B**	**C**
Tank capacity/m^3	15,000	15,000	10,000
Product	Gas Oil	Gas Oil	Gasoline

3. Bidding will be conducted through **International Competitive Bidding** Procedure.

4. To be eligible for contract award, the successful bidder shall not have been blacklisted and comply with the **minimum qualification criteria** mentioned in the ITB of the Procurement document to be eligible for this bid.

5. Interested parties may refer the Procurement document excluding drawings (only for viewing purpose) and obtain necessary information through the websites www.cpstl.lk / www.dgmarket.com and a complete set of Procurement Documents in English language may be purchased by interested bidders on the submission of a written application to the address below from 05.01.2026 until 23.02.2026 from 0900 hrs. and 1400 hrs (IST) on any working day upon cash payment of a non-refundable fee of LKR 250,000.00 or remittance of USD 835.00 directly to the CPSTL bank account, details given below. All bank charges (foreign & local) shall be borne by bidder and proof of remittance (copy of TT) is required along with a written request before 14 days to the Bid closing date to issue the Procurement document by courier service. No liability will be borne by CPSTL on loss or late delivery. Procurement Document (excluding drawings) available in the web is only for viewing purpose and Bids shall be submitted using Hard Copy of the Procurement Document purchased from CPSTL.

	Payment in LKR	**Payment in USD**
Non-refundable fee	LKR 250,000.00	USD 835.00
A/C Holder	Ceylon Petroleum Storage Terminals Limited, Oil Installation, Kolonnawa, Wellampitiya, Sri Lanka.	
A/C No	004-1-001-9-0208672	074733828 US$
Bank & Branch	People's Bank Corporate Branch No. 91, All Ceylon Hindu Congress (ACHC) Building Sir Chittampalam A. Gardiner Mawatha Colombo 02, Sri Lanka	Bank of Ceylon Corporate Branch Head Office, Head Office Building No. 04, Bank of Ceylon Mawatha Colombo 01, Sri Lanka
SWIFT	PSBKLKLX	BCEYLKLX
Branch Code	004	7010

6. A pre-bid meeting will be held at 1000 hrs (IST) on **10th February 2026** at the Admin Building, Ceylon Petroleum Storage Terminals Limited, Muthurajawela Terminal, Kerawalapitiya, Wattala, Sri Lanka. In case, the bidders are unable to participate the pre bid meeting, they can participate via video conferencing method. Interested parties who wish to participate in the Pre bid meeting shall send their request to email procure@cpstl.lk at or before 1400 hrs. (IST) on 09**th February 2026.**

7. Bids shall be submitted on the Procurement document issued by the Procurement Function - CPSTL and the original of the duly filled bids may be sent by post/courier under registered cover or sealed cover to reach the Chairman, High Level Procurement Committee (HLPC), C/o Manager Procurement, Ceylon Petroleum Storage Terminals Limited, Procurement Function, 01st Floor, New Building, Oil Installation, Kolonnawa, Wellampitiya, Sri Lanka or could be deposited in the tender box kept at the main entrance of CPSTL, on or before 1400 hrs. (IST) on 24th February 2026. Late bids will be rejected.
8. If bidders are unable to submit the original bids as specified, they may submit a scanned copy of the completed bid in PDF format via email to tenders@cpstl.lk to reach at or before 1400 hrs. (IST) on **24th February 2026**. subject to following conditions.
    i. Submission of the bid via email is at own discretion of the bidder.

ii. If the bidder intends to submit a bank guarantee or bank draft as the bid security (instead of a direct deposit to the CPSTL bank account), the original bank guarantee / bank draft must be sent or hand-delivered to the above address by 1400 hrs. on 24.02.2026.

iii. The title and the closing date of the bid shall be indicated as the subject of the email.

iv. The Size of an email (with attachment) shall be limited to the maximum of 20 MB. In case the size of an attachment exceeds 20 MB, the bidder is requested to split the attachments and send as separate emails (i.e. 01 of 03, 02 of 03 etc.,).

v. Direct links to external sites or shared folders (e.g., Google Drive) are strictly prohibited.

vi. Do not CC or BCC any other official or personal email IDs of CPSTL staff.

vii. The original bid document must be securely kept and submitted to the Manager Procurement upon request. However, the original bid document will only be used for filing purposes and not for verification against the e-bid.

9. Bids shall be valid up to **01.09.2026**.

10. All bids shall be accompanied by a Bid Security of LKR 35,000,000.00 (Sri Lanka Rupees Thirty Five Million only) or USD 120,000.00 (US Dollars One Hundred Twenty Thousand Only). The Bid Security shall be valid up to **27.10.2026**.

The address referred to above is

The Chairman, High Level Procurement Committee,
C/o Manager Procurement,
Ceylon Petroleum Storage Terminals Limited,
Procurement Function, New Building,
Oil Installation, Kolonnawa, Wellampitiya,
Sri Lanka.
Postal Code : 10600
Telephone :+94 11 2572156, +94 11 2572156 Facimile :+94112074299
E-mail : procure@cpstl.lk

SECTION 1

INSTRUCTIONS TO BIDDERS

INSTRUCTIONS TO BIDDERS

Instructions to Bidders applicable to this contract are that given in Section-I of the Standard Bidding Document for Procurement of Works - Major Contracts. ICTAD Publication No. ICTAD/SBD/02, Second Edition, January 2007, published by the Construction Industry Development Authority (CIDA), "Savsiripaya", 123, Wijerama Mawatha, Colombo 07.

This publication will not be issued with the Procurement Document and the Bidder is advised to purchase it from CIDA.

Instructions to Bidders shall be read in conjunction with the Bidding Data provided under Section-2 of the Procurement Document.

Instructions to Bidders will not be a part of the contract and will cease to have effect once the Contract is signed.

SECTION – 2

BIDDING DATA

Note:

This section shall be read in conjunction with Section I – Instructions to Bidders, and is intended to provide specific information in relation to corresponding clauses in Section I. Whenever there is a discrepancy, the provisions in Section 2 – Bidding Data shall supersede these provided in the Section I - Instructions to Bidders.

BIDDING DATA	
Instructions to Bidders Clause Reference	
1.1	**Employer's Name and Address:** Ceylon Petroleum Storage Terminals Limited, Oil Installation, Kolonnawa, Wellampitiya, Sri Lanka.
	SCOPE OF WORKS **'PROCUREMENT, CONSTRUCTION AND COMMISSIONING OF 2 NOS. 15,000 M^3 AND 1 NO. 10,000 M^3 STORAGE TANKS AT MUTHURAJAWELA TERMINAL'** The scope of work consists of the reviewing CPSTL provided engineering design, Submit Design Review Report and preparation of detailed construction drawings; supply of all equipment and materials; construction, installation, and inspection; mechanical testing; internal and external painting and obtaining third-party inspector approval for the commissioning of two (2) vertical above-ground atmospheric storage tanks (15,000 m^3 each for Diesel) and one (1) vertical above-ground atmospheric storage tank (10,000 m^3 for Petrol), all designed and constructed in compliance with API Standard 650 (Twelfth Edition, March 2013). The scope also encompasses piling works, RCC raft foundations, cathodic protection systems, road network development, fencing, dyke construction, piping supports, Drain Pits, Intermediate oily water Manholes, Valve pits, culverts, Valves, Construction and Integration of Petroleum product, Fire water, Oily water and storm water piping systems with existing piping systems, Construction and Integration of fire detection and Suppression systems, lighting, cabling, electrical and instrumentation systems with existing systems, Integration of new installations with existing automation and SCADA systems, and all other associated engineering works required for the complete and functional installation of the storage tanks and related infrastructure. All activities shall be executed in accordance with API, ASME, NFPA, AWS and other applicable industry standards, safety regulations, and quality assurance requirements.

Tank No.	**A**	**B**	**C**
Tank capacity/m^3	15,000	15,000	10,000
Product	Gas Oil	Gas Oil	Gasoline

	The TECHNICAL SCOPE OF WORK of CONTRACTOR includes the following, but not limited to, principle activities: (i). General Responsibilities The CONTRACTOR shall be fully responsible for performing the entire TECHNICAL SCOPE OF WORK, which includes complete detailed engineering and design studies, procurement of materials and equipment, testing at the manufacturer's shop and worksite, receipt and storage at the worksite, fabrication, construction, assembly, installation, Corrosion protection, inspection, testing, mechanical completion, pre-commissioning, obtaining Third-Party Inspector certifications, acceptance, commissioning, start-up, and rectification of defects. Additionally, the CONTRACTOR shall provide training for the OWNER'S personnel in accordance with the CONTRACT and as specifications, datasheets, and drawings. (ii).Engineering & Design The CONTRACTOR shall review, evaluation, verification, correction, improvement, and formal endorsement of all provided engineering designs and layouts to produce integrated, detailed construction drawings as the contractor is responsible for the total construction work. This full-scope responsibility includes all civil, structural, mechanical, piping, lighting, electrical and instrumentation disciplines, specifically covering piling works, RCC raft foundations, the internal road network, fencing, dyke construction, underground utilities, extensions to the existing oily water recovery and storm water system, extensions to the existing fire detection and Suppression systems, and complete integration with the site's existing automation and SCADA systems. The CONTRACTOR shall verify design sufficiency for the foundations of all three steel tanks and their accessories; the Contractor must formally confirm in writing to CPSTL the design's suitability prior to any work commencement. This validation requires submitting a design review report for the tank foundations from a state university engineering faculty or the Central Engineering Consultancy Bureau (CECB). Furthermore, the total design for steel tanks including dome roofs must be reviewed by an entity qualified under API Standard 650 and structural design. Internal Floating Roof (IFR) for 10,000 m^3 Tank shall be Vendor Designed as per API Standard 650 and CPSTL Specifications. While minor variations to the tanks' diameters and heights are permissible in the design review, the total volumes and foundation types must remain unchanged, subject to the Engineer's prior written approval. All detailed tank drawings shall be prepared in strict accordance with API Standard 650 (Twelfth Edition, March 2013), and every drawing and document requires prior approval from CPSTL before the commencement of any

procurement or work. All activities must be executed in full compliance with API, BS, ASME, NFPA, AWS and all other applicable industry standards, safety regulations, and quality assurance requirements.

(iii). Procurement & Logistics

The CONTRACTOR shall provide procurement services, including purchasing, shipping, transportation, storage, protection, and certification of materials and equipment. This encompasses mechanical, piping, structural, electrical, instrumentation items, as well as cathodic protection systems. The CONTRACTOR shall also supply spare parts required for pre-commissioning, commissioning and start-up, Spare part catalogues, operational and repair manuals for the above equipment, as specified in the Procurement documents.

(iv). Construction & Installation

The CONTRACTOR shall construct, erect, install, fabricate, and test all project components, including two (2) vertical above-ground steel atmospheric storage tanks with a capacity of 15,000 m^3 each for Diesel and one (1) tank with a capacity of 10,000 m^3 for Petrol *including Internal Floating Roof* , all designed per API Standard 650 (Twelfth Edition, March 2013 or latest). The scope also includes cathodic protection systems, dykes, piping supports, Drain Pits, Intermediate oily water Manholes, Valve pits, culverts, Valves, Construction and Integration of Petroleum product, Fire water, Oily water and storm water piping systems with existing piping systems, Construction and Integration of fire detection and Suppression systems, the internal road network, fencing, dyke construction, concrete/steel structures, underground utilities, lighting, cabling, electrical and instrumentation systems with existing systems, Integration of new installations with existing automation and SCADA systems along with engineered landscaping and site reinstatement.

Major pre fabrications such as shell plate rolling etc. shall be carried out in contractors site.

(v). Testing, Inspection & Commissioning

The CONTRACTOR shall conduct all necessary testing, including Factory Acceptance Tests (FAT), Site Acceptance Tests (SAT), hydrotesting, IFR Initial Floatation, Non-Destructive testing, leak detection, Testing of Piles (Static, Dynamic, Integrity tests etc.). Mechanical completion, pre-commissioning, and commissioning activities, calibration shall be performed, followed by system start-up and performance verification. Third-party inspection certifications shall be obtained where required.

(vi). Health, Safety, Environment & Quality (HSE & QA/QC)

The CONTRACTOR shall establish and implement a Project-Specific Quality and HSE Management System (QHSE), including risk management procedures, safety plans, environmental controls and waste / excavated material disposal (outside the CPSTL premises) procedures. Fire barriers, fire blankets, dust

barriers, temporary fences shall be installed appropriately to isolate construction site from tanks and equipment in operation and other areas where operational activities are going on.

Potential risks in a petroleum installation shall be identified and appropriate measures shall be taken to mitigate such risk. All construction, welding, and installation activities shall comply with approved quality standards, with proper documentation of inspections, non-conformance reports, and corrective actions.

(vii). Documentation & Deliverables

Upon project completion, the CONTRACTOR shall submit all final documentation, including as-built drawings, engineering reports, calculations, Spare part lists, operation and maintenance manuals, inspection and testing reports, welding records, procurement documentation and catalogues. All deliverables shall be organized and handed over in Two Printed hard copies and soft copies in a Solid State Drive (SSD) Hard Disk with Enclosure (USB) accordance with the contract requirements.

(viii).Temporary Facilities & Site Management

The CONTRACTOR shall install and maintain temporary site facilities, including offices, material storage yards, first aid and sanitary facilities. Utilities such as water supply, drainage, and sewerage shall be provided for the construction workforce.

(ix). Training & Project Handover

The CONTRACTOR shall conduct comprehensive training for the OWNER'S personnel on the operation and maintenance of all installed systems. A smooth project handover shall be ensured, including defect rectification during the warranty period.

(x). Value Engineering & Optimization

The CONTRACTOR shall perform value engineering to optimize technical solutions, material selection, and construction methodologies, ensuring cost efficiency without compromising quality, performance, standards, safety, reliability, or regulatory compliance.

Proposals must be submitted in writing and include detailed technical justification, revised calculations and drawings, a clear itemization of cost savings, and an analysis of any impacts on project schedule, lifecycle costs, and operations. All proposals shall conform to API, ASME, NFPA, BS and other applicable standards referenced in this contract and are subject to the CPSTL prior written approval.

This clause applies only to voluntary Value Engineering proposals developed by the Contractor and not to changes directed by the Owner or required to correct nonconforming or deficient work. Acceptance of any Value Engineering proposal is at the sole discretion of the CPSTL.

	Construction Location Muthurajawela Petroleum Terminal, Kerawalapitiya, Wattala, Sri Lanka
1.2	**Time for Completion** The Time for Completion for the whole of works shall be **540 Calendar Days.**
2.1	**Source of funds** The source of funds is Ceylon Petroleum Storage Terminals Limited.
4.1	**Qualification Information** The following information shall be provided in Section 9 – Schedules in English language: ● ICTAD (CIDA) registration (For domestic bidders) Registration number Grade Specialty Expiry date ● Copy of Business Registration of the Company/ies (if a foreign company, Business registration issued by the relevant country) ● VAT registration number (if applicable) ● Form PCA 03 (if applicable) *As per the Public Contract Act No, 3 of 1987, the Prospective Bidders shall be registered in Department of Registrar of Companies through https://eroc.drc.gov.lk/ website and submit PCA 3 certificate along with their Bid.* ● Construction program ● Legal status (Sole proprietor, Partnership, Company etc.) ● Authentication for signatory in the form of a Power of Attorney or any other relevant evidential document such as a board resolution authorizing the signatory to sign the Form of Bid shall be submitted (Specifically for this Bid) — In the case of a Joint Venture, the JV agreement or a letter indicating the intention to form a JV shall be submitted. — In the case of a sole proprietorship, the Form of Bid shall be signed by the sole proprietor. — In the case of a partnership, if the Form of Bid is not signed by all partners, it shall be accompanied by a Power of Attorney signed by the non-signing partners authorizing the signing partners. — In the case of a Company limited by liability, the Form of Bid shall be signed by a person authorized by a Board Resolution. The person who holds authority by a board resolution will be able to delegate authorization to sign through a power of attorney. ● Total monetary value of construction work performed for each of the last five years ● Experience in works of a similar nature and size for each of the last five years including work in progress. ● Construction equipment

<table>
<tr><td></td><td>

- Staffing
- Work plan, method statements, QA/QC procedures and HSE policy Details of the suppliers and manufactures

</td></tr>
<tr><td>4.1 (c)</td><td>Not applicable</td></tr>
<tr><td>4.2</td><td>To qualify for the award of the Contract, bidder shall meet the following minimum qualifying criteria specified under 4.2 (a), 4.2 (b), 4.2 (c), 4.2 (d), 4.2 (e) and 4.2 (f) of “Bidding Data”. Any bidder who does not submit required details in the requested manner and in English language will be liable for rejection of his bid without requesting any clarification.</td></tr>
<tr><td>4.2(a)</td><td>ICTAD (CIDA) registration required
(i) For domestic Bidders: - ICTAD (CIDA) registration is required as follows;
<table>
<tr><th>Specialty</th><th>Grade</th><th>Party</th></tr>
<tr><td>Heavy Steel Fabrication</td><td>EM1</td><td>Bidder or Partner in Charge of Joint Venture (JV)</td></tr>
<tr><td>Geotechnical Piling Board Cast Insitu (GP-B)</td><td>GP-B1 or above</td><td>Bidder or Partner in Charge of JV or Partner of JV</td></tr>
</table>
(ii) For foreign bidders, ICTAD (CIDA) registration is not required at the Bid submission, but additional experience is required as per 4.2 (c).
Any Foreign Contractor who wishes to carry out any "Construction Contract" as the main/lead party upon the succeeding its bid, shall obtain a Temporary Registration Certificate for Foreign Contractor; as per the procedure stipulated by Construction Industry Development Authority (CIDA) of Sri Lanka under the Extraordinary Gazette bearing No. 2085/19 dated 23.08.2018 using the application No. CIDA/ID/21.</td></tr>
<tr><td>4.2(b)</td><td>Average annual volume of construction work performed in last 5 years
Average annual volume of construction work performed in last five years shall be at least LKR 3,500 million or equivalent amount in foreign currency.
Details shall be entered in Schedule 2 of Section 9; “Schedules”. Documentary evidence such as copies of audited financial statement/accounts certified by an Attorney at Law for the last five (05) years (2020/2021, 2021/2022, 2022/2023, 2023/2024 and 2024/2025) shall be submitted.
For evaluation of Bids, Average annual volume of construction work stated in foreign currencies by the bidders will be converted to Sri Lanka Rupees using “Indicative Exchange Rate” published by the Central Bank of Sri Lanka, on the date 28 Days prior to date of closing of Bids.</td></tr>
<tr><td>4.2(c)</td><td>Experience
The experience of the Bidder/JV in “Tank construction” and “piling work” during last five years shall be as follows.
a. Bidder or Partner in Charge of JV should possess experience as a prime contractor in the construction of a nature and complexity similar to the Works (10,000 m^3 or higher capacity steel, vertical, above ground storage tank as per</td></tr>
</table>

	API Standard 650) during last five years. (to comply with this requirement, works cited should be at least 70% complete). b. Bidder or Partner in Charge of JV or Partner of JV should possess experience in the construction of 600mm or higher diameter Bored Cast Insitu piling work into the bedrock. At least one project in each speciality for domestic bidder/ domestic partner of JV/ domestic JV while two projects in each specialty for foreign bidder/ foreign partner of JV. Details shall be entered in Schedule 4 of Section 9; "Schedules". Documentary proof (Copy of Purchase Order, performance certificate, completion certificate, agreement etc.) for successful completion of the work relating to experience shall be submitted with the offer. Documentary proof shall be certified by the Embassy/ Consular General Office or Foreign Ministry of the relevant country in which the project has been carried out. The bidders shall have very clear documentary evidence in English Language as proof of above experience.
4.2(d)	**Essential equipment** Proposals for the timely acquisition (own, lease, hire, etc.) of the following minimum required essential equipment shall be entered in Schedule 5 of Section 9 "Schedules". Piling machines, Desanding machines, bar bending machines, Concrete Mixers, Poker Vibrators, Plate Compactors, Scaffoldings, Excavator/JCB, Surveying Equipment, concrete breakers, compressors, 50-ton Cranes, welding generators, heat treatment equipment, Sand blasting equipment etc.
4.2(e)	**Managerial and Technical staff** Following minimum staff shall be available and deployed to the Contract. Details shall be entered in Schedule 6 of Section 9; "Schedules". The bidder shall produce documentary proof for availability of following staff and their detailed Bio-Data. **(i) Managerial:** a. A Project Manager, a Chartered Engineer with minimum 10 years experience full time basis for the project. b. An Engineer with B.Sc. (Eng.) or equivalent with more than 8 years experience in works of similar nature tank construction including not less than three years as a Manager full time basis at site during tank construction. c. An Engineer with B.Sc. (Eng.) or equivalent with more than 8 years experience in works of similar nature pile construction including not less than three years as a Manager full time basis at site during civil construction.

	(ii) Technical: a. An engineer who is conversant with API Standard 650 and other relevant standards and codes. b. A Mechanical Engineer with B.Sc. (Eng) or equivalent with more than 5 years' experience in similar tank fabrication works should be assigned to the project full time basis at site during tank construction. c. An Electrical / Instrumentation Engineer with B.Sc. (Eng) or equivalent with more than 5 years' experience in similar Fire Detection & Suppression System/ tank gauging system/oily water system and associated works should be assigned to the project full time basis at site during systems installation, testing and commissioning works. d. A Civil Engineer with B.Sc. (Eng) or equivalent with more than 5 years' experience in similar pile foundation works should be assigned to the project full time basis at site during Civil construction. e. Two (2) Welding Inspectors with AWS / CSWIP 3.1 Certification or equivalent with more than 5 years' experience in similar tank fabrication works should be assigned to the project full time basis at site during tank construction. f. Safety officer with 5 years' experience in similar tank fabrication works should be assigned to the project full time basis at site during construction. This is the minimum requirement and the successful bidder shall assign all other necessary staff to enable compliance with all other contractual stipulations.
4.2(f)	**Liquid assets and /or credit facilities required** The minimum amount of liquid assets and/or credit facilities, net of other contractual commitments and exclusive of any advance payments, which may be made under the Contract, until the project is taken over by the CPSTL, shall be not less than **LKR 590 million or equivalent amount in foreign currency.** * For evaluation of Bids, minimum amount of liquid assets and/or credit facilities stated in foreign currencies by the bidders will be converted to Sri Lanka Rupees using "Indicative Exchange Rate" published by the Central Bank of Sri Lanka, on the date 28 Days prior to date of closing of Bids.
4.2(g)	If any bid has been quoted without considering foreign currency component limitation of 25%, as per the sub clause no. 15.1 of Bidding Data, such bidder will be requested to adjust his foreign currency component as per the limitation without changing the total bid price. If the bidder does not agree for such adjustment, his bid will be rejected.
5.2	One of the partners shall have the qualification requirement for 4.2 (a) and (c). The qualification for each of the partners of a joint venture shall be added together to determine the bidder's compliance with the minimum qualifying criteria of Sub-Clause 4.2 (b) and (f); however, for a joint venture to qualify, each of its partners

	must meet at least 25 percent of minimum criteria 4.2 (b) and (f); and the partner in charge must satisfy at least 40 percent of those minimum criteria. Failure to comply with this requirement will result in rejection of the joint venture's Bid. Subcontractor's experience and resources will not be taken into account in determining the bidder's compliance with the qualifying criteria. 4.2(c) shall be fully complied by the partner in charge or one of the JV partner as applicable.
8	**Site Visit** Prior to submitting a bid, bidders shall familiarize themselves and shall be deemed to have done so. The bidders shall inform Manager (Procurement), Oil Installation, CPSTL, Kolonnawa, Wellampitiya (Tel.: +94 11 2572156, +94 11 2572155, Fax No. +94112074299) at least 02 days in advance with their names, NIC Numbers/Passport Numbers so that the CPSTL will arrange required permits for the site visit. The bidders are advised to limit the number of persons, for the visit, due to the security reasons. Site visit will be permitted during 0830 – 1600 hrs except Sundays and Mercantile Holidays. The cost of such visits shall be borne by the bidder.
10.1	**Clarification of Procurement Documents** Employer's address for clarification in Procurement document is as below. **The Chairman, High Level Procurement Committee,** **C/o Manager Procurement,** **Ceylon Petroleum Storage Terminals Limited,** **Procurement Function, New Building,** **Oil Installation, Kolonnawa, Wellampitiya,** **Sri Lanka.** **Postal Code : 10600** **Telephone :+94 11 2572156, +94 11 2572155** **Facimile :+94112074299** **E-mail : procure@cpstl.lk**
13	**Documents comprising the Bid** The Bid submitted by the bidder shall comprise the following: (A) Enclosed in the envelope marked as "ORIGINAL"; (a) Duly filled and signed Form of Bid (in the format indicated in section 7); (b) Bid Security (in the format indicated in section 11); (c) Power of attorney for the signatory to the Bid (Specifically for this Bid); (d) Original of Form PCA 03 (if applicable) (e) Section 2 - Bidding Data (f) Section 4 - Contract Data

	(g) Section 6 - Specifications; (h) Section 8 - Priced Bill of Quantities; (i) Section 9 - Duly filled Schedules; (j) Section 10 - Drawing; and (k) Detailed "Construction Procedure" of the project including related procurement, construction, testing, commissioning and documentation such as catalogues, literature, write-ups to supplement with adequate information. Manufacture/supplier, country of origin, country of manufacture of plates, pipes, fittings, flanges, valves, nozzles, foam pourer, internal floating roof, cathodic protection system, sensors, cables, dip hatch, leak detection system, other instruments and equipment shall be clearly mentioned. (B) Enclosed in the envelope marked as "COPY" (a) Duly filled and signed Form of Bid (in the format indicated in section 7); (b) Section 8 - Priced Bill of Quantities; (c) Section 9 - Duly filled Schedules; (d) Detailed "Construction Procedure" of the project including related procurement, construction, testing, commissioning and documentation such as catalogues, literature, write-ups to supplement with adequate information. Manufacture/supplier, country of origin, country of manufacture of plates, pipes, fittings, flanges, valves, nozzles, foam pourer, internal floating roof, cathodic protection system, sensors, cables, dip hatch, leak detection system, Fire detection and Suppression equipment, other instruments and equipment shall be clearly mentioned.
14.3	**SSCL component and VAT component shall not be included in the rates.** If bidder is registered for VAT, the bidder shall indicate the amount of VAT claimed separately at the end of the Bill of Quantities, in addition to the net value of the bid, along with VAT registration number. The amount written on the Form of bid shall be without VAT. If any bidder is not registered for VAT, he shall indicate the net value of the bid. Under the category bidder shall obtain a letter from the Commissioner of Inland Revenue Department, certifying the Company has not been registered for VAT, shall be attached to the bid. Any bidder who does not comply with this requirement will be liable for rejection of his bid.
14.4	**Adjustments for change in cost** The Contract **is subjected** to price adjustment.
15.1	**Currency of Bid** In order to minimize the risk of fluctuation in foreign currency exchange rate, the bidders are allowed to bid partially in United States Dollars (USD). Hence, the Bid shall be quoted in mixed currencies (LKR and USD). In the case of mixed currencies, foreign currency component shall be 25% of the total Bid Price and the bidders are allowed to bid in foreign currency only for

	importation of material, plant, equipment & machinery, and payment of remuneration for expatriates etc. For evaluation and comparison of Bids under Sub-Clause 30.2, rates and prices quoted in foreign currencies by the bidders will be converted to Sri Lanka Rupees using "Indicative Exchange Rate" published by the Central Bank of Sri Lanka, on the date 28 Days prior to date of closing of Bids.
16.1	**Period of Bid validity:** The Bid shall be valid up to **01.09.2026**
17.1	**The amount of Bid Security** The Amount of Bid Security LKR 35,000,000.00 (Sri Lanka Rupees Thirty-Five Million only) or USD 120,000.00 (US Dollars One Hundred Twenty Thousand Only).
17.2	**Validity of Bid Security** The Bid Security shall be valid up to **27.10.2026** as per attached specified format. Securities and Guarantees shall be irrevocable and unconditionally en-cashable upon the first written request from the Procuring Entity. The bid securities issued by the following agencies are acceptable; ● a commercial bank operating in Sri Lanka approved by the Central Bank of Sri Lanka, ● a bank based in another country but the guarantee "backed and confirmed" by a Commercial bank operating in Sri Lanka approved by the Central Bank of Sri Lanka. (Local bank and the bank based in another country shall jointly bear the responsibility in case of encashment of the security)
19.1	**Pre-Bid meeting** A pre-bid meeting will be held at 1000 hrs (IST) on **10th February 2026** at the office of Admin Building, Ceylon Petroleum Storage Terminals Limited, Muthurajawela Terminal, Kerawalapitiya, Wattala or via video conferencing method at 1000 hrs (IST). Subsequently, a site visit will be arranged. All costs incurred in attending to this pre bid meeting and site visit will have to be borne by the Bidder.
21.2 (a)	**Employer's Address for Bid submission** Employer's address for the purpose of bid submission is the Office of the **The Chairman, High Level Procurement Committee,** **C/o Manager Procurement,** **Ceylon Petroleum Storage Terminals Limited,** **Procurement Function, New Building,** **Oil Installation, Kolonnawa, Wellampitiya,** **Sri Lanka.** **Postal Code : 10600**

21.2 (b)	**Identification number of Contract** Identification Numbers of the Contract: KPR/01/2026
22.1	**Deadline for submission of Bids** Deadline for submission of Bids: 1400 hrs. (IST) on **24th February 2026**
25.1	**Bid opening** Venue: **Office of Manager Procurement, Ceylon Petroleum Storage Terminals Limited, Procurement Function, New Building, Oil Installation, Kolonnawa, Wellampitiya, Sri Lanka.** Time: **1400 hrs. (IST)** Date: **24.02.2026**
31.1	**Preference for Domestic Bidders** Not Applicable
32	**Award of Contract** After evaluation of Bids in accordance with the procedure described under Clause 28, 29, 30 and 31, the Employer will inform to all the bidders in writing the selection of the successful bidder and the intention of contract award to such bidder. The unsuccessful bidders if they so wish, within one week of such notice may make representation to the Procurement Appeal Board at the address given below. Such representation shall be self-contained to enable the Appeal Board to arrive at a conclusion and a cash deposit to amount given below shall be made. The Appeal Board may request the bidder who had made representation to submit further evidence during the investigations. The cash deposit will be forfeited unless the Employer has changed the original contract award decision in favour of the bidder who has made such representation. Address: The Chairman Procurement Appeal Board Presidential Secretariat Colombo Sri Lanka Cash Deposit: LKR 200,000/=
35.1	**Amount of Performance Security** Performance Security acceptable to the Employer given in the Form for Performance Security given in the Procurement document shall be a Guarantee obtained from; ● a commercial bank operating in Sri Lanka approved by the Central Bank of Sri Lanka,

	● a bank based in another country but the guarantee "backed and confirmed" by a Commercial bank operating in Sri Lanka approved by the Central Bank of Sri Lanka. (Local bank and the bank based in another country shall jointly bear the responsibility in case of encashment of the security) The amount of Performance Security is **5%** of the Initial Contract Price, in the currencies and proportions in which the Contract Price is payable. The Performance Security shall be valid until 28 days beyond the expected completion date of Defects Liability Period.
37	**Dispute Adjudication Board (DAB)** Fees and types of reimbursable expenses to be paid to the Dispute Adjudication Board **(**DAB) shall be on a case-to-case basis and shall be shared equally by the Contractor and the Employer. (As the estimated cost of this contract exceeds Rs.500Mn, DAB has to be appointed)
37.1	Within 28 days from the Commencement Date each of the Parties shall appoint one member to serve on the Dispute Adjudication Board (DAB). The Parties shall consult both these members and shall agree upon the third member, who shall be appointed to act as the chairman. If either Party fails to nominate a member to the DAB or the Parties fail to agree upon the third member or the Parties fail to agree on the appointment of a replacement person to DAB, then upon the request of either or both Parties the **Construction Industry Development Authority (CIDA)/ former ICTAD** shall appoint the relevant member to the DAB.

SECTION – 3
CONDITIONS OF CONTRACT

Conditions of Contract shall be read in conjunction with the Section 4 – Contract Data, which shall take precedence over the Conditions of Contract.

CONDITIONS OF CONTRACT

Conditions of Contract that will be applicable for this Contract is that given in section- 3 of the Standard Bidding Document for Procurement of Works- Major Contracts, ICTAD Publication No. ICTAD/SBD/02, Second Edition, January 2007, Addendum 01 issued in October 2009, published by the Construction Industry Development Authority (CIDA)"Savsiripaya" 123, Wijerama Mawatha, Colombo 7.

This publication will not be issued with the Procurement Document and Bidder is advised to purchase it from CIDA.

Conditions of Contract shall be read in conjunction with the Section 4 – Contract Data, which shall take precedence over the Conditions of Contract.

SECTION – 4

CONTRACT DATA

Note:

This section shall be read in conjunction with Section 3 – Condition of Contract, and is intended to provide specific information in relation to corresponding clauses in Section 3. Whenever there is a discrepancy, the provisions in Section 4 – Contact Data shall supersede these provided in the Section 3 - Condition of Contract.

CONTRACT DATA		
Conditions of Contract Clause Number/s		
1.1.2.2 & 1.3	**Employer's Name and Address**	**Ceylon Petroleum Storage Terminals Limited,** **Oil Installation,** **Kolonnawa,** **Wellampitiya,** **Sri Lanka.**
1.3	**Contractor's Name & Address:**	Name: …… Address: …… ……
1.1.2.4 & 1.3	**Engineer's name & Address**	Name: Deputy General Manager (Engineering and Services) Address: Ceylon Petroleum Storage Terminals Limited, Oil Installation, Kolonnawa, Wellampitiya, Sri Lanka.
1.1.3.3	**Time for Completion of the Works**	Time for completion of the whole works shall be **Five Hundred and Forty (540) Days**
1.1.3.7	**Defects Notification Period**	Defects Notification Period is **Three Hundred Sixty-Five (365) Days**
2.1	**Right of access to the Site**	14 days after Letter of Acceptance
4.2.1	**Amount of Performance Security**	The amount of Performance Security is **5%** of the Initial Contract Price, in the currencies and proportions in which the Contract Price is payable. Performance Security acceptable to the Employer given in the Form for Performance Security given in the Procurement document shall be a Guarantee obtained from; ● a commercial bank operating in Sri Lanka approved by the Central Bank of Sri Lanka, ● a bank based in another country but the guarantee "backed and confirmed" by a Commercial bank operating in Sri

		Lanka approved by the Central Bank of Sri Lanka. (Local bank and the bank based in another country shall jointly bear the responsibility in case of encashment of the security) The Performance Security shall be valid until 28 days beyond the expected completion date of Defects Liability Period.
4.8	**Safety Procedure**	Special Safety Conditions i. Fire barriers to be erected and Fire blanket are to be laid before starting hot work at site where ever required. ii. The work/workers should conform to the Fire & Safety rules and regulations of CPSTL and they should wear safety belts when working at high elevations. iii. Before work of any nature is commenced in any area it is necessary to obtain excavation permits, safety certificates and if the work involves sparks or flames a hot work permit from the Fire & Safety Section of the CPSTL, Muthurajawela depending on nature of work. All precautions stipulated in these documents must be adhered by the contractor and his employees. If the work cannot be completed in the period for which these documents are valid, the work shall be discontinued until the documents have been renewed. iv. The CPSTL Muthurajawela Terminal is security-restricted area and all contractor's personnel shall abide by the security regulations prevailing and those which might be enforced as and when necessary due to changed circumstances. v. All contractor's personnel and their vehicles will be required to obtain gate passes before enter in to the CPSTL Muthurajawela Terminal. Safety clearances to be obtained before enter to the tank farm. vi. All contractor's personnel should possess valid police clearance certificate (Police Report) to obtain gate passes. vii. The contractor shall, except if and so far as the contract provides otherwise, indemnify the CPSTL against all losses and claims in respect of injuries or damage to any person or material or physical damage to any property whatsoever which may arise out of or in consequence of the execution of the works and against all claims, proceedings, damages, costs, charges and expenses whatsoever in respect of or in relation thereto except any compensation or damages for or with respect to: a. the permanent use or occupation of land by the works or any part thereof;

		b. the right of the CPSTL to execute the works or any part thereof on, over, under, in or through any land; c. injuries or damage to persons or property resulting from any act or neglect of the CPSTL, his agent, servants or other Contractors, not being employed by the Contractor, or for or in respect of any claims proceedings, damages, costs, charges and expenses in respect thereof or in relation thereto or where the injury or damage was contributed to by the Contractor, his servants or agents such part of the compensation as may be just and equitable having regard to the extent of the responsibility of the Employer, his servants or agents or other contractors for the damage or injury.
6.4	**Working Hours**	i. Normal working hours of CPSTL from Monday to Friday is from 0730 hrs. to 1630 hrs. ii. In the work programme, contractor can consider Saturday and period from 1630 hrs to 1800 hrs on weekdays as a working period, for which the contractor is required to obtain prior permission since the offices are normally closed on Saturdays and after hours. iii. However, working on Statutory holidays, Sundays and after 1800 hrs. on working days will not be permitted. Provided always that provision of above (iii) shall not be applicable in case of any work which is customary to carry out, outside normal working hours.
8.7	**Liquidated damages for the Works**	LKR 2.5 Million per day
8.7	**Maximum amount of liquidated damages**	10% of the Initial Contract Price
12.2 (b)	**Method of Measurement**	Sri Lanka Standard 573: 1999 UDC 69(08374)
13.4(b)	**Percentage for Adjustment of Provisional Sums**	Not applicable

<table>
<tr>
<td>13.7</td>
<td>Adjustments for Changes in Cost</td>
<td>Adjustments for change in cost
The Contract is subjected to price adjustment.
<table>
<tr><th>No.</th><th>CIDA No</th><th>Name of Input</th><th>Percentage</th></tr>
<tr><td>1</td><td>L1</td><td>Skilled Labour</td><td>19.7%</td></tr>
<tr><td>2</td><td>L3</td><td>Unskilled Labour</td><td>9.1%</td></tr>
<tr><td>3</td><td>M39</td><td>Ready Mixed Concrete</td><td>12.5%</td></tr>
<tr><td>4</td><td>M 8</td><td>Reinforcement Steel</td><td>25.3%</td></tr>
<tr><td>5</td><td>P1</td><td>Small Equipment</td><td>4.6%</td></tr>
<tr><td>6</td><td>P2</td><td>Heavy Equipment</td><td>16.3%</td></tr>
<tr><td>7</td><td>P3</td><td>Fuel</td><td>2.5%</td></tr>
<tr><td colspan="3">Sub Total</td><td>90.0%</td></tr>
</table>
Non-Adjustable BOQ Item Nos. are A1 to A13, B16 to B22, C16 to C22, D17 to D245, F1 to F6 only.</td>
</tr>
<tr>
<td>14.2</td>
<td>Total Advance Payment</td>
<td>20 % of the Initial Contract Price excluding Provisional Sums & Contingencies.
The advance payment securities issued by the following agencies are acceptable;
● a commercial bank operating in Sri Lanka approved by the Central Bank of Sri Lanka,
● a bank based in another country but the guarantee “backed and confirmed” by a bank in Sri Lanka approved by the Central Bank of Sri Lanka. (Local bank and the bank based in another country shall jointly bear the responsibility in case of encashment of the security)</td>
</tr>
<tr>
<td>14.2</td>
<td>Number and timing of instalment for Advance Payment</td>
<td>20% of Initial Contract Price, will be paid in two equal instalments.
Stage 1-
The first ten percent (10%) of Initial Contract Price will be paid within 14 days from receipt of both Performance Security and Advance Payment Guarantee as required under clause 4.2 and 14.2 respectively.
Stage II-
Balance ten percent (10%) of Initial Contract Price will be paid after successfully mobilization at the site after receipt of mobilization Advance Payment Guarantee.</td>
</tr>
<tr>
<td>14.3(c)</td>
<td>Percentage of Retention</td>
<td>10% of certified value of works</td>
</tr>
<tr>
<td>14.3(c)</td>
<td>Limit of Retention</td>
<td>5% of the Initial Contract Price</td>
</tr>
<tr>
<td>14.4</td>
<td>Plant & Material Intended for</td>
<td>Interim Payment Certificates shall include, under sub-paragraph (e) of Sub-Clause 14.3 (Application for Interim Payment Certificate), an amount equivalent to 80% of the invoiced value of Plant and Materials which have been delivered to the Site for</td>
</tr>
</table>

	the works	incorporation in the Permanent Works.
14.5	**Minimum amount of interim payment certificates**	LKR 100 million
14.6	**Payment**	All other conditions including currencies, taxes and other statutory levies, except domestic preferences consideration, shall be applicable equally to foreign and domestic bidders. To be eligible for foreign currency payment, bidders are required to submit justification to that effect. Import of materials, plant, equipment and machinery, and payment of remuneration for expatriates, would for instance be deemed to be valid justifications. **Payments for foreign contractors** Payments will be made for USD component in USD and LKR component in LKR. **Payments for domestic contractors** According to the Chapter 422, 4(1) of Monetary Law Act, local contractors are not allowed to receive the payment in foreign currencies. Hence, the payments will be made by converting the USD component into LKR using the "Indicative Exchange Rate" published by the Central Bank of Sri Lanka at the date of invoice and LKR component in LKR. In case Indicative Exchange Rate is not published, same of immediate previously available date will be applicable.
14.8	**Alternative method for Payment of Retention**	Not applicable
18.1 (a)	**Insurance for Works**	For an amount not less than 115% of Initial Contract Price.
18.1 (b)	**Insurance for Contractor's Equipment**	Contractor's responsibility
18.2	**Third Party Insurance (including Employer's Property)**	Insurance cover to the amount of LKR 100 Million for the entire period of construction work. The contractor shall take special measures to safeguard the adjacent storage tanks and allied facilities at the site.
18.3	**Insurance for Contractor's Personnel**	A copy of insurance policy for the workmen of the contractor as per the Workmen Compensation Act shall be forwarded to CPSTL prior to commencement of the work.

SECTION 5

STANDARD FORMS (CONTRACT)

- **FORM OF LETTER OF ACCEPTANCE**
- **FORM OF AGREEMENT**
- **FORM OF PERFORMANCE SECURITY**
- **FORM OF ADVANCE PAYMENT SECURITY**

Notes on Standard Forms (Contract):

Bidders should not complete the Form of Agreement at the time of preparing of bids. The successful Bidder will be required to sign the Form of Agreement, after the award of contract. Any corrections or modifications to the accepted bid resulting from arithmetic corrections, acceptable deviations, or quantity variations in accordance with the requirements of the bidding documents should be incorporated into the Agreement.

The Form of Performance Security, Form of Advance Payment Security and Form of Retention Money Guarantee should not be completed by the Bidders at the time of preparation of bids. The successful Bidder will be required to provide these securities in compliance with the requirements herein or as acceptable to the Employer.

FORM OF LETTER OF ACCEPTANCE

[Letter heading paper of the procuring entity]

……. *[date]*

To: …….*[name and address of the Contractor]*……..
This is to notify you that your bid dated …….*[insert date]* for the construction and remedying defects of the …….. *[name of the Contract and identification number]* for the Contract price of …… [*name of currency]* …….. [*amount in figures and words]* as corrected in accordance with Instructions to Bidders and/ or modified by a Memorandum of Understanding, is hereby accepted.

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

The Commencement date shall be: …… *(fill the date as per Clause 8.1 of Conditions of Contract).*

The amount of Performance Security is…… *(fill the amount as per Clause 4.2 of Conditions of Contract).*

The Performance Security shall be submitted on or before ……... *(fill the date as per Clause 4.2 of Conditions of Contract).*

Authorized Signature: ……

Name and title of Signatory: …….

FORM OF AGREEMENT

This Agreement made the …….*[day]* of …… *[month]* 20….*[year]*, between **Chairman, Ceylon Petroleum Storage Terminals Limited, Oil Installation, Kolonnawa, Wellampitiya***[name and address of Employer]* (hereinafter called and referred to as "the Employer"), of the one part, and ……. ……..
[name and address of Contractor] (hereinafter called and referred to as "the Contractor"), of the other part:

Whereas the Employer desires that the Contractor execute ……
[name and identification no of Contract] (hereinafter called and referred to as "the Works") and the Employer has accepted the Bid by the Contractor for the execution and completion of such Works and remedying of any defects therein.

The Employer and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract.
2. In consideration of the payments to be made by the Employer to the Contractor as indicated in this Agreement, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of the Contract.
3. The Employer hereby covenants to pay the Contractor in consideration of the execute and complete the Works and remedy any defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

In Witness whereof the parties hereto have caused this Agreement to be executed the day and year aforementioned in accordance with laws of Sri Lanka.

……..	……..
Authorised signature of Contractor	**Authorised signature of Employer**
COMMON SEAL	COMMON SEAL

In the presence of
Witnesses :

Name and NIC No. ……..
Signature ……..

Address ……
……

Name and NIC No. ……..
Signature ……

Address ……
……

FORM OF PERFORMANCE SECURITY
(Unconditional)

……*[Issuing Agency's Name and Address of Issuing branch or Office]*

Beneficiary: Ceylon Petroleum Storage Terminals Limited, Oil Installation, Kolonnawa, Wellampitiya

Date:……..

PERFORMANCE GUARANTEE No:…….

We have been informed that …… …… ……*[Name of Contractor]*(Hereinafter called "The Contractor") has entered into Contract No. ……. *[Reference number of the contract]* dated ……. with you, for the ……..(*insert "Construction")* of …… *(Name of Contract and brief description)* (hereinafter called "the Contract").

Furthermore we understand that according to the conditions of the Contract, a performance guarantee is required.

At the request of the contractor, we ……..……..…… [Name of agency] hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of……[amount in figures] …… ……..……..……..…… [amount in words]Upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation (s) under the Contract without your needing to prove or to show grounds for your demand or the sum specified therein .

This guarantee shall expire, no letter than the ……..day of 20……[insert date,28 days beyond the time of completion] and any demand for payment under it must be received by us at this office on or before that date.

_____

[Signature(s)]

FORM OF ADVANCE PAYMENT SECURITY

…… *[Name and address of Agency, and Address of Issued branch or Office]*

Beneficiary: Ceylon Petroleum Storage Terminals Limited, Oil Installation, Kolonnawa, Wellampitiya

Date: ……

ADVANCE PAYMENT GUARANTEE No:……

We have been informed that ……. *[Name of Contractor]* (hereinafter called " The Contractor") has entered into Contract No. …… *[reference number of the contract]* dated ……. with you , for the …… Construction of ……. ……. (Name of Contract and brief description) (hereinafter called " the Contract").

Furthermore we understand that according to the conditions of the Contract, an advance Payment in the Sum ……. [amount in figures] (…… ……..……..)[amount in words] is to be made against an advance payment guarantee.

At the request of the contractor, we ……. [Name of issuing agency] hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of ……. [amount in figures] (…… …….) [amount in words] upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation in repayment of the Advance Payment under the Contract.

The Maximum amount of this guarantee shall be progressively reduced by the amount of the Advance payment repaid by the Contractor.

This guarantee shall expire, on ……. (insert the date, 28 days beyond the Time of Completion)

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

_____

[Signature(s)]

SECTION – 6

SPECIFICATIONS

6. SPECIFICATIONS

6.1 CPSTL SCOPE OF SUPPLY

6.1.1 Construction Utilities

6.1.1.1 Electricity and drinking water that would be supplied to the CONTRACTOR to undertake this work would be charged from the CONTRACTOR as per meter/estimate. The prospective CONTRACTOR is required to indicate his requirements of power from the CPSTL in his offer for evaluation purposes.

6.1.1.2 The electrical power supply is available to the CONTRACTOR subjected to following conditions.

(i) CPSTL shall provide only the power supply tapping point with a meter at the nearest switch room.

(ii) CONTRACTOR shall supply and install his own feeder cables and power distribution board required for the work site from the tapping point.

(iii) The maximum power CPSTL shall supply is 63A, 400V, 50Hz, 3 Phase.

(iv) The electricity charge shall be deducted from the Final Bill of the CONTRACTOR.

(v) A fixed charge of Rs. 3,000/= one-off payment and a consumption charge as per applicable tariff rate for the concerned period shall be deducted as the electricity charge.

(vi) Engineer shall estimate the bill on above basis in occasions the power supply is provided without a meter.

6.2 CONTRACTOR'S SCOPE OF SUPPLY AND SCOPE OF WORKS

The scope of work of the CONTRACTOR is defined in general and shall include the following, but not limited to the same. The CONTRACTOR shall carry out the Works as per the specifications, drawings, BOQ and Engineer's directions. The CONTRACTOR shall also carry out all the related works that are not listed in this document, but required for completion of the entire work as specified in this Procurement Document.

6.2.1 GENERAL RESPONSIBILITIES & PROJECT MANAGEMENT

6.2.1.1 The CONTRACTOR is responsible for its own investigations to establish sufficient and accurate information for the construction of proposed 3 nos. steel storage tanks. The Bidder shall visit the proposed sites and shall ascertain the nature and location thereof and all conditions which may affect construction of the 3 nos. steel storage tanks and foundations.

6.2.1.2 The CONTRACTOR shall make its own assessment of any and all of the information provided in this Procurement document and collect own information. CPSTL is not responsible for the accuracy or completeness of any such information.

6.2.1.3 The CONTRACTOR shall be responsible for all project planning, scheduling, and resource management, including submitting a detailed project time schedule, manpower schedule, equipment schedule, and cash flow schedule (including S-curves).

6.2.1.4 The CONTRACTOR shall carryout the project planning considering that all the modifications, constructions, installations and extensions while operations are going on

and with minimum impact to the operation in the Muthurajawela Terminal.

6.2.1.5 The CONTRACTOR shall carry out all mobilization, site establishment, and demobilization work, including construction and subsequent removal of temporary site offices and facilities.

6.2.1.6 **Work Execution**

All the modifications, constructions and installations shall be carried out while operations are going on in the Muthurajawela Terminal. Therefore, the work shall be executed in a manner with minimum impact to the ongoing operations in the Terminal.

6.2.1.7 **Permits, Licenses and Consents**

It is the sole responsibility of the CONTRACTOR to identify, to obtain, to complete, and maintain any permits and any other consent, licenses and approvals that are required for construction of the tanks. CPSTL will co-ordinate with the CONTRACTOR in identifying, applying, and processing such permits, consents, licenses and approvals.

6.2.1.8 **Quality Assurance and Control**

During project execution, the CONTRACTOR shall be required to develop, implement and maintain a project specific quality plan covering all aspects of the project. The CONTRACTOR shall provide a quality assurance manual applicable to the design, procurement, construction, commissioning and testing of the Plant and evidence of accreditation to a national or international assurance standard equal to ISO 9001.

6.2.1.9 **Health, Safety and Environmental (HSE) Requirements**

The CONTRACTOR is requested to provide a sound-working environment to all employees involved in the construction, testing and commissioning. This includes the consideration of but not limited to:

- All applicable national and international laws, guidelines and standards
- All applicable national and international codes and standards with respect to Occupational Health and Safety and Environmental Protection.

The CONTRACTOR shall be requested to submit a detailed HSE Plan considering the site configuration and the site conditions. The final HSE Plan must include the following content and objectives as a minimum:

(i) Project policy statement
(ii) Roles and responsibilities
(iii) Site regulation including housekeeping, barricades, excavations, tools and equipment, electrical work, ladders and scaffolds etc.
(iv) Risk management & hazard identification
(v) HSE training
(vi) HSE management of SUB CONTRACTORs
(vii) Work permit system
(viii) Personnel protective equipment
(ix) Inspection & auditing
(x) HSE meetings
(xi) Incident investigation & reporting
(xii) Site security
(xiii) Medical care & first aid.

The detailed HSE Plan shall demonstrate the CONTRACTOR's commitment to the highest standards of personal and general safety standards, health and occupational hygiene of the construction workforce during construction of the 3 nos. steel storage tanks as well as the concept of an accident and injury free project.

The safety track record of the CONTRACTOR in previous projects should also be highlighted, as well as the methodology that it will adopt, particularly in the intense environmental conditions of the region, in order to ensure the highest standards of health & safety management on the construction site.

6.2.1.10**Packing and Transport Identification**

All parts of the tanks and Equipment shall be well packed and protected against loss or damage during the transport by sea and over land and whilst in storage under adverse climatic conditions. All packing shall be performed in such a way that overturning of the packages will not damage the equipment. Dimensions of packages, crates, etc., shall be suitable for road transport. Instruction for handling shall be clearly marked on all parts, packages and crates.

All parts, packages and crates shall be adequately marked in order to enable identification. Each item contained in a package shall be clearly identified on the packing list by its description and part number and assembly drawing reference, and each item shall be marked or labelled to correspond with the packing list. The identification system to be used shall be as instructed by the Employer.

The CONTRACTOR shall be entirely responsible for all packing and any loss or damage shall be replenished/ fixed by the CONTRACTOR and, except where otherwise provided, at the CONTRACTOR's own expense.

Any transhipment of materials and equipment through countries shall be the CONTRACTOR's responsibility. Any cost(s) associated with transhipment of materials and equipment shall be deemed to be included in the Bid Price.

Identification and preparation of access to the site and transportation of equipment and materials shall be the responsibility of the CONTRACTOR. Any costs associated with identification and preparation of access to the site shall be deemed to be included in the offered Price.

6.2.1.11 **Material Properties**

(i) Materials selected by the Bidder shall be proven adequate and sufficient for the complete term of the Project.
(ii) The CONTRACTOR shall carefully consider all corrosion and erosion possibilities subject to the environment of the Site and nearby facilities.
(iii) Where materials are specified in any part of the Employers Requirements, those materials are to be considered as minimum requirement.

6.2.1.12 **Corrosion protection**

The Bidder shall be aware of and take into account the corrosion problems to be encountered on site due to the severe weather conditions, especially with equipment installed outdoors.

The Bidder shall provide with their Bid the civil design criteria they intend to follow, in which details regarding his proposed methods of corrosion protection for reinforced concrete and steel structures are given and procedures described.

6.2.1.13 **Reinforced concrete**

The guidance for a suitable concrete design, it is recommended that reference should be made to BS standards for the verification of the structural design.

Prior to detail engineering, the successful Bidder is required to describe their minimum requirements for concrete covers and proposed method of concrete production considering the local conditions. The quality control system on site to guarantee the quality shall be described in detail.

Special care shall be taken for concrete production under hot weather conditions. Explanations shall be given with regard to crack-free concrete design, in particular concerning groundwater structures and monolithic elements, if applicable.

6.2.1.14 **Environmental Management Requirements**

The CONTRACTOR shall avoid any environmental damage and/or concerns to the environment during any phase of the project.

The CONTRACTOR shall demonstrate during the construction, testing and commissioning that work is able to comply with all applicable environmental regulations and standards. Applicable standards for environmental protection must be fulfilled without any restrictions. This applies in particular but not limited to:

(i) Air emission limit values and standards
(ii) Air quality limit values
(iii) Limit values for environmental noise
(iv) Health and safety of construction workers and permanent staff.

6.2.1.15 **Codes and Standards**

The Bidder shall ensure that the engineering, design, construction, testing, etc. of, 3 nos. steel storage tanks including all auxiliary facilities and systems, are according to Government and Local Authority Requirements, International Codes, Latest revisions of the following codes shall be governed.

Document Title	Document Number
BS Structural use of concrete	BS 8110: Part 1 : 1985
BS Structural use of Steel work	BS 5950 – 1: 2000
Code of Practice for Foundation	BS 8004
Design loads for buildings	BS 6399: Part I
Code of Practice for Earth retaining structures	BS 8002
Design of buildings for high winds in Sri Lanka – July 1980	CP3 Chapter V-Part2:1972[2]
Inspection Documents for Metallic Products	EN 10204
Standard for Welding Pipelines and Related Facilities	API 1104
Process Piping (Pressure piping)	ASME B 31.3
Pipeline Transportation Systems for Liquid Hydrocarbon and Other Liquids	ASME B31.4
Specification for Line Pipe	API 5L
Specifications for Pipeline Valves	API 6D
Valve inspection & Testing	API 598
ANSI – Pipe Flanges and Flanged Fittings	ANSI B 16.5
Large Diameter Steel Flanges	ASME B16.47
Welded Steel Tanks for Oil Storage	API STD 650 Twelfth Edition, March 2013.

Document Title	Document Number
	(including all Addenda and Errata)
Tank Inspection, Repair, Alteration and Reconstruction Welded Steel Tanks For Oil Storage	API 653
Manual of Petroleum Measurement Standards	API-MPMS
Automatic level gauges for measuring the level of liquid in stationary storage tanks	OIML R 85-1 & 2
Design, Construction, Operation, Maintenance and Inspection of Terminal and Tank Facilities	API Standard 2610, Third Edition, September 2018
Overfill protection for storage tanks in petroleum facilities Aboveground storage tanks	API 2350 4th edition
Boiler and Pressure Vessel Code (Welding and Brazing Qualification)	ASME Sec IX
Electrical Equipment For Explosive Gas Atmosphere (International Electro technical Commission) Part 10	IEC 60079
Tests On Electrical Cables Under Fire Conditions Part 3	IEC 60332
Recommended Practice Classification of Locations For Electrical Installations At Petroleum Facilities Classified As Class 1, Division 1 And Division 2	API RP 500
Applicable codes and Standards published by National Fire Protection Association (NFPA)	NFPA 11, NFPA 15, NFPA 20, NFPA 30
Tank Internal Painting	ISO 16961:2015
External Painting of Tanks, Pipelines and steel structures	ISO 12944/2018
Specification for bored and cast in-situ reinforced concrete piles, 1st Edition-March 2016.	CIDA/SP/101
Specifications for Building Works (Vol. I) – [3rd Edition (Revised) – July 2004]	SCA/4/I
Specifications for Building Works (Vol. II) – [2nd Edition (Revised) – October 2001]	SCA/4/II
Standard Specifications for Construction and Maintenance of Roads and Bridges [2nd Edition – June 2009]	SCA/5
Specifications for Irrigation & Land Drainage – [1st Edition – January 2017]	CIDA/SP/102
Specifications for Water Supply Sewerage & Storm Water Drainage - [2nd Edition (Revised)– April 2002]	SCA/3/2

Document Title	Document Number
Specifications for Electrical & Mechanical Works - [2nd Edition (Revised) – August 2000]	SCA/8
Specifications for Fire Detection, Protection & Suppression Systems	SCA/9

It is implied that the eligible Bidders are fully acquainted with the above Documents and therefore, those will not be issued to the Bidders with this Procurement Document. However, Bidders may purchase the same, if necessary, from CIDA, Savsiripaya", 123, Wijerama Mawatha, Colombo 7, Sri Lanka or other relevant organisation.

In case of any conflict between the codes and standards, the following order of precedence shall govern: -

(i) Local laws (Sri Lankan Authorities)

(ii) CPSTL Specifications and Guidelines

(iii)International Codes and Standards

6.2.2 ENGINEERING, DESIGN & VERIFICATION

6.2.2.1 The CONTRACTOR assumes full-scope responsibility for the entire construction work and, as such, shall conduct a comprehensive review, evaluation, verification, correction, improvement, and formal endorsement of all engineering designs and layouts provided by CPSTL to produce integrated, detailed construction drawings as the CONTRACTOR is responsible for the total construction work.

6.2.2.2 This full-scope responsibility includes all civil, structural, mechanical, piping, lighting, electrical and instrumentation disciplines, specifically covering piling works, Steel Tank, RCC raft foundations, the internal road network, fencing, dyke construction, underground utilities, extensions to the existing oily water recovery and storm water system, extensions to the existing fire detection and Suppression systems, Extension to electrical and instrumentation systems and complete integration with the site's existing automation and SCADA systems.

6.2.2.3 **DESIGN OF TANK FOUNDATIONS**

(i) The CONTRACTOR shall verify design sufficiency for the foundations of all three steel tanks and their accessories; the CONTRACTOR must formally confirm in writing to CPSTL the design's suitability prior to any work commencement. This validation requires submitting a design review report for the tank foundations from a state university engineering faculty or the Central Engineering Consultancy Bureau (CECB).

Soil Investigations (Bore Holes) reports and borehole logs prepared during existing tank farm construction during 1999 to 2003 are available for bidders reference.

Foundation Designs of ongoing 15,000m3 Tank in Kolonnawa Installation which was designed by Central Engineering Consultancy Bureau (CECB) and Designs of concrete structures/Dykes in existing tank farm of Muthurajawela Terminal are annexed in this document for reference of the Bidder.

The CONTRACTOR shall carryout review of civil designs by one of Engineering Faculties of State Universities or Central Engineering Consultancy Bureau and submit "Design Review Report for Foundation" to the Engineer for his approval before commencement of the Work.

However, the Bidders are required to arrive at their prices for foundations of proposed tanks based on above design and borehole logs. The foundation details of tanks are given under technical specification. Bed rock is available at the locations at the depth of 20-25m.

6.2.2.4 **DESIGN OF STEEL TANKS**

(i) The design of steel tanks as per the API 650 was carried out by CPSTL and relevant specifications and drawings are annexed.

(ii) The CONTRACTOR shall carryout review of the total design for the steel tanks, including the dome roofs by an entity specifically qualified under API Standard 650 and structural design and submit "Design Review Report for Steel Tanks" to the Engineer for his approval before commencement of the Work.

(iii) Internal Floating Roof (IFR) for 10,000 m³ Tank shall be Vendor Designed as per API Standard 650 and CPSTL Specifications.

(iv) Following these reviews and verifications, the CONTRACTOR shall prepare all detailed tank construction drawings in strict accordance with API Standard 650 (Twelfth Edition, March 2013).

(v) Detailed Fire Fighting system drawings including P&ID must be prepared as per all applicable NFPA standards.

(vi) Detailed Instrumentation drawings including P&ID for Radar Level Gauge, Multipoint Temperature Transmitter with water bottom sensor, Pressure Transmitter, Level switches for Level High & Level low, communication interfacing devices, stilling wells, Process connection flanges, GI conduits for cables, any other intermediate devices etc.

(vii) The CONTRACTOR shall obtain prior approval for all drawings and documents from CPSTL before commencement before the commencement of any procurement or physical work.

(viii) All detailed tank drawings shall be prepared in strict accordance with API Standard 650 (Twelfth Edition, March 2013), and every drawing and document requires prior approval from CPSTL before the commencement of any procurement or work. All activities must be executed in full compliance with API, BS, ASME, NFPA, AWS and all other applicable industry standards, safety regulations, and quality assurance requirements.

(ix) The CONTRACTOR shall submit all drawings and documents at least 4 weeks in advance and obtain prior approval from CPSTL before commencement of the relevant work.

(x) The proposed tank capacities and the products to be stored are as follows,

Tank No.	**A**	**B**	**C**
Tank capacity/m^3	15,000	15,000	10,000
Product	Gas Oil	Gas Oil	Gasoline

(xi) While minor variations to the tanks' diameters and heights are permissible in the design review, the total volumes and foundation types must remain unchanged, subject to the Engineer's prior written approval.

6.2.2.5 DESIGN OF EXTENSION TO THE PIPING SYETEMS, SUPPORTIVE SYSTEMS AND CIVIL CONSTRICTION

(i) The CONTRACTOR shall prepare detailed construction drawings and P&ID for Tanks, Product and fire water piping, Fire detection & Suppression system, Oily water System, Storm water system, Tank Gauging System etc. as per the applicable standards and CPSTL provided and existing designs of the Muthurajawela Terminal, which must integrate seamlessly with the existing systems at the Muthurajawela Terminal.

(ii) **Extension to Product Piping, Fire water Piping, Oily Water & Storm Water piping and other necessary piping extensions**

a. The CONTRACTOR shall be responsible for the complete detailed design, engineering, and drafting of all piping system extensions. The design shall ensure seamless hydraulic, mechanical, and operational integration with the existing piping networks at the Muthurajawela Terminal. All materials, pressure ratings, and connection details shall be compatible with the existing infrastructure.

b. Material selection (e.g., CS, SS) shall be based on product compatibility and shall match the grade and specification of the existing product lines.

c. Detailed P&IDs and construction drawings for the extension to the Product piping system shall be developed showing the integration point with the existing system, all new isolation valves, drain valves, air release valves, instrumentation ties-ins (e.g., pressure, flow), and Motor Operated Valves (MOVs) with their control logic.

d. Detailed P&IDs and construction drawings for the extension to the Oily Water system shall be developed showing all new collection points, junction pits, interceptors, sampling points, and the connection to the existing oily water drain system. The piping network shall be designed with a minimum slope to ensure self-cleaning flow velocities and prevent solids deposition. Routing shall direct flow towards the designated collection sump or treatment facility

e. Detailed P&IDs and construction drawings for the extension to the Fire Water system shall show all new hydrants, monitors, isolation valves, drain points, and connections to the existing fire loop. The integration point must include a properly sized sectional control valve. The design shall comply with NFPA requirements for water supply, flow rates, and pressure.

(iii)**Extension to Instrumentation, Automation and Electrical Systems**

The extensions shall be designed for seamless integration into the existing automation system including SCADA and PLC systems. The CONTRACTOR shall provide:

a. Detailed design and P&IDs for instrumentation on new tanks, including but not limited to: Radar Level Gauges, Multipoint Temperature Transmitters (with water bottom sensor), Pressure Transmitters, Level Switches (High & Low), and necessary

communication interface devices.

b. Instrumentation design for the extension of the Fire Detection and Suppression System.

c. The extension of the electrical systems shall be designed to connect with the existing electrical infrastructure. The design shall include detailed layout for energising instruments, High Pole Street lighting including lightening arresters, single phase and 3 phase power outlets and cater for all necessary electricity requirements. Extensions to Motor Control Centre (MCC) / Electrical Substation panels shall be done to integrate electrical systems.

d. Existing Cable trenches can be used to lay new control and power cables and new cable trenches shall be design and constructed as appropriate.

e. Tanks and other steel structures shall be grounded as per applicable standards.

(iv) **Yard and Site Improvements**

a. The CONTRACTOR shall prepare detailed civil drawings for all site works as per the CPSTL provided designs and drawings, existing design in Muthurajawela Terminal, including:

- Access roads and paving
- Cable Trenches for electrical and Instrument cables as per Electrical and Instrumentation system extensions.
- Dykes and bund walls
- Sleepers for piping supports
- Storm water drainage culverts and channels
- Structural steel platforms and access stairways

(v) Details of existing tanks, piping system, oily water system, Fire detection & Suppression system, Steel Platforms, tank gauging system, SCADA/PLC system etc. of existing tank farm are available in PDF format for bidder's/CONTRACTOR's reference.

(vi) All design, review, and drawing activities must be executed in full compliance with API, BS, ASME, NFPA, AWS and all other applicable industry standards, safety regulations, and quality assurance requirements. The CONTRACTOR shall obtain prior approval for all drawings and documents from CPSTL.

6.2.3 CONSTRUCTION AND INSTALLATION

6.2.3.1 Site Preparation & Temporary Works

(i) The CONTRACTOR shall carryout mobilization work, site cleaning, construction/ maintenance/ subsequent removal of temporary site offices and other facilities for the CONTRACTOR's personal and demobilization on the completion of works, removal of all rubbish and debris to a place outside the CPSTL premises arranged by the CONTRACTOR and leaving the site, clean internally and externally.

(ii) The CONTRACTOR shall demolish reinforced concrete, temporary buildings / structures including Army Camp, Cut & removing trees (coconut tree & other trees), remove the roots and removing all rubbish, debris etc. from the site as directed by the Engineer.

(iii) CONTRACTOR shall handover the usable materials to CPSTL Stores as directed by the Engineer.

(iv) The CONTRACTOR shall erect temporary fire barriers and fire blankets as required for a petroleum terminal in order to protect the surrounding piping and other tanks in service and construct temporary access roads as required.

(v) The CONTRACTOR shall supply, erection, maintenance and subsequent removal of all required scaffoldings with relevant attachments, safety precautions, nets etc. for permanent works (internal & external)

(vi) Major pre fabrications such as shell plate rolling etc. shall be carried out in CONTRACTORs site

6.2.3.2 Tank Foundations & Civil Works

The pile foundations of Tank No. A, B, and C shall be constructed as follows,

(i) Site Clearing

The construction site shall be cleared by removing of vegetation, removing of debris, removing of top soil etc., where applicable, before commencement of piling works. The debris shall be transport to a place outside the CPSTL premises arranged by the CONTRACTOR and CONTRACTOR shall handover the usable materials to CPSTL Stores as directed by the Engineer.

(ii) Piling work

Piling work shall be carried out as per the "Specification for bored and cast in-situ reinforced concrete piles" - CIDA/SP/101, 1st Edition-March 2016.

a) Concrete Mixes
Concrete mixes shall conform to Grade 30 of BS 5328, SCA/4/I and SCA/4/II or equivalent.

b) Steel Reinforcement
Steel reinforcement shall conform to BS 4449, SCA/4/I and SCA/4/II or equivalent.

c) Bentonite
Bentonite, as supplied to the site and prior to mixing, shall be in accordance with the specifications DFCP 4 of the Oil Companies Materials Association, London.

d) Form work
Form Work shall conform to SCA/4/I and SCA/4/II or equivalent at least with six meter length of casing.

e) Pile testing
   a. Static load test of piles (4 Nos. piles per tank) as per CIDA/SP/101, 1st Edition-March 2016
   b. Integrity Testing of Piles as per Clause-6.1 of CIDA/SP/101, 1st Edition-March 2016 - 100% of piles
   c. Pile Dynamic Analyzer Testing as per Clause-6.2 of CIDA/SP/101, 1st Edition-March 2016 – 18% of total number of piles.
   d. Investigation of failure and remedial action as per Section-8 of CIDA/SP/101, 1st Edition-March 2016
   e. All the testing should be carried out third party and test reports to be provided accordingly

(iii)Raft Slab

a) Excavation
Excavation for raft foundation material other than topsoil, rock or artificial hard material, to a maximum depth of 1.5 m. Excavation work shall be included dewatering (if required), preparation of bottom of excavation and disposal of excavated material within CPSTL premises.

b) Concrete Mixes
Concrete mixes shall conform to Grade 15 for Screed and Grade 30 for Raft Slab of, SCA/4/I and SCA/4/II or equivalent.

c) Steel Reinforcement
Steel reinforcement shall conform to BS 4449, SCA/4/I and SCA/4/II or equivalent.

d) Form work
Form Work shall conform to SCA/4/I and SCA/4/II or equivalent.

(iv)Ring beam & Apron Slab

a) Concrete Mixes
Concrete mixes shall conform to Grade 25 for Apron Slab & Grade 30 for Ring Beam of, SCA/4/I and SCA/4/II or equivalent using river sand.

b) Steel Reinforcement
Steel reinforcement shall conform to BS 4449, SCA/4/I and SCA/4/II or equivalent.

c) Form work
Form Work shall conform to SCA/4/I and SCA/4/II or equivalent. If plywood boards are used, the boards shall be film faced and new plywood. The curvature shall be maintained using steel frame work.

(v) Sand Layer

Lay 500mm thick layer of sand using river sand on raft slab as instructed by the Engineer. The layer to be graded to suit the slope of the bottom plates.

(vi)Laying of Sand Tar mixture

Lay 100mm thick layer of sand tar mixture using river sand mixed with hot bitumen (80%-100% penetration grade) and percentage of bitumen used should be 5% by weight of sand. The mix to be laid hot and compacted as instructed by the Engineer. The layer to be graded to suit the slope of the bottom plates.

6.2.3.3 Construction of RCC dikes and Drains, tank farm access roads, culverts, pipeline under passes, pipe sleepers, pipe supports, Cable trench, Valve chambers, Catch pits, Manholes / Interceptors etc.

(i) Excavation
General trench Excavation shall conform to SCA/4/I, SCA/4/II or equivalent and SCA/5.

(ii) Earth Filling
Earth Filling Shall be confirm to SCA/5.

(iii) Concrete Mixes
Concrete mixes shall conform to Grade 25 & Grade 15 of SCA/4/I and SCA/4/II or equivalent, using river sand on structural concreting all expose surfaces.

(iv) Steel Reinforcement
Steel reinforcement shall conform to BS 4449, SCA/4/I and SCA/4/II or equivalent.

(v) Form work
Form Work shall conform to SCA/4/I and SCA/4/II or equivalent. If plywood boards are used, the boards shall be film faced and new plywood. The curvature shall be maintained using steel frame work.

(vi) Rubble packing

300mm thick Rubble packing shall be as per road sectional detail and Shall be confirm to SCA/5.

(vii) ABC Laying

ABC (Aggregate Base Course) laying shall be as per road sectional detail and Shall be confirm to SCA/5.

(viii) Tank farm access roads

Road Constructions shall be as per road sectional detail and Shall be confirm to SCA/5.

(ix) Pipelines and Cable under passes

Supplying & laying 2.4m long NP3 type Hume pipes of 600mm dia. for Pipeline crossings and 300mm dia. for cable crossings.

(x) Pre cast pile

400mm dia. Pre cast pile casting and placing as per the detailed drawings.

(xi) Embedded Plate and Pipe Supports

Pipe Supports shall be saddle design and Embedded Plate shall be 8mm plate fabricated from thick Mild steel plate anchored to sleepers as per the drawings.

6.2.3.4 Steel Tank Fabrication & Erection

(i) The CONTRACTOR shall procure, supply of Steel plates Other required materials and all equipment and; construction, installation, commissioning of two (2) vertical above-ground atmospheric storage tanks (15,000 m³ each for Diesel) and one (1) vertical above-ground atmospheric storage tank (10,000 m³ for Petrol), all designed and constructed in compliance with API Standard 650 (Twelfth Edition, March 2013).

(ii) The CONTRACTOR shall procure, supply, install, test and commission of Internal Floating Roof (IFR) and vent system for Tank-C (10,000 m^3 tank) as per API Standard 650 – Twelfth Edition, March 2013.

(iii)The Tanks shall be constructed as per following data

Data	**Tank No**		
	A	**B**	**C**
Product to be Stored	Gas Oil	Gas Oil	Gasoline
Tank Working Capacity /m^3	15,000	15,000	10,000

Data	Tank No		
	A	**B**	**C**
Tank Diameter/m	36	36	31.2
Tank shell height/m	17.4	17.4	15.0
Max. Operating Temperature/^{0}C	60	60	60
Minimum shell plate, roof plate, bottom plate and annular plate thicknesses	As per drg. no. 1780-2	As per drg. no. 1780-2	As per drg. no. 1780-3
Specific gravity of content kg/m^3@15^0 C	820 – 860	820 – 860	720- 785
Operating Temperature/^{0}C	Ambient Temperature	Ambient Temperature	Ambient Temperature
Operating Pressure	Atmospheric Pressure	Atmospheric Pressure	Atmospheric Pressure
Design Temperature/^{0}C	60	60	60
Design Pressure	Full of Water	Full of Water	Full of Water
Vapour Pressure at @ 37.8^0 C (100^0 F)	35-65 kpa (5.0 – 9.4 psi) obtain from lab	35-65 kpa (5.0 – 9.4 psi) obtain from lab	35-65 kpa (5.0 – 9.4 psi)
Corrosion allowance for,			
First Shell Course	3 mm	3 mm	3 mm
Other Shell Courses	1.5mm	1.5mm	1.5mm
Bottom Annular Plates	3 mm	3 mm	3 mm
Bottom Plates	3 mm	3 mm	3 mm
Roof Structure (Plates, Rafters etc.)	1.5mm	1.5mm	1.5mm
Roof Design	Self-supported Dome roof	Self-supported Dome roof	Self-supported Dome roof
Live Load (Roof)	15 ibf/ft^2 (0.72 kPa)	15 ibf/ft^2 (0.72 kPa)	15 ibf/ft^2 (0.72 kPa)
Internal Floating Roof (IFR)	N/A	N/A	Aluninium Pontoon Type IFR
Dead load	The weight of the tank or tank component	The weight of the tank or tank component	The weight of the tank or tank component
Seismic factor	No	No	No
Filling Rate/ m^3/h	1250	1250	1250
Emptying Rate/ m^3/h	1000	1000	1000
Max. wind velocity/ km/h	160	160	160
Max rainfall/ mm per hour	150	150	150

(iv) The CONTRACTOR shall procure, supply, fabricate, install and welding of following tank accessories as required.

Accessory	Number in each tank		
	Tank No. A (15,000 m^3 - Gas Oil)	**Tank No. B** (15,000 m^3 - Gas Oil)	**Tank No. A** (10,000 m^3 - Gasoline)
16” dia. Inlet Nozzle with	1	1	1

diffuser			
16” dia. Outlet Nozzle	1	1	1
12” dia. Circulation Nozzle	1	1	1
16” dia. Spare Outlet with blind	1	1	1
30” dia. Shell Manhole	2	2	2
30” dia. IFR Access Manhole	-	-	2
24” dia. Roof Manhole	2	2	2
16” DBB Valve	1	1	1
16” Gate Valve	2	2	2
12” Gate Valve	1	1	1
6” Gate Valve	1	1	1
4” Gate Valve	1	1	2
8” Butterfly Valve (Fire Water)	1	1	1
6” Butterfly Valve (Fire Water)	3	3	3
4” Butterfly Valve (Foam)	3	3	2
6” MOV (Fire Water)	2	2	2
Foam Manifold	1	1	1
12” dia. Flexible Hose	1	1	1
16” dia. Double Tide Expansion Joint	2	2	2
Water drencher System (Shell-Middle,Shell-Top & Roof)	1 set	1 set	1 set
Foam pourer system	1 set	1 set	1 set
4” dia. Draw-off nozzle and piping	2	2	2
48” Draw-off sump (centre)	1	1	-
48” Draw-off sump (corner)	-	-	2
12” dia. floating suction system	-	-	-
Drain water flushing system	-	-	-
Manual gauging unit	-	-	-
Spiral staircase with hand rail	1 set	1 set	1 set
3” dia. Level switch nozzles	2	2	2
2” dia. PT nozzle	1	1	1
2” dia. Nozzles for oil return/spare	1	1	1
1” dia. Nozzles for high, middle, low sample points near inlet nozzle	3	3	-
8” dia. Roof Nozzle	1	1	-
8” dia. Roof Nozzle and slotted vertical pipe from roof to bottom for radar gauge	-	-	1
6” dia. Roof Nozzle	1	1	-
6” dia. Roof Nozzle and slotted vertical pipe from roof to bottom for dipping	-	-	1
6” dia. Dip hatch	1	1	1
2” TE Nozzle (in roof)	1	1	-
4” TE Nozzle (in roof) and SCH 80 vertical pipe from roof to bottom for temp. gauge	-	-	1
2” TE Nozzle (in shell)	1	1	1

Roof air vent with flame arrester	1	1	-
Roof centre air vent	-	-	1
Rim vent system	-	-	1 set
Roof & other hand rails as required	1 set	1 set	1 set
Floating Suction arm including floats	-	-	-
Necessary attachments for instrumentation and cabling	1 Set	1 Set	1 Set
IFR	-	-	1

(v) Fabrication and installation of the name plates shall be as per the API Standard 650 Twelfth Edition, March 2013 (Section-10) requirements. Size (200mm x 200mm) Etching of letters shall be approximately 0.5 mm deep. Letters shall be erect round Gothic style. Nameplate material shall be 2mm thick stainless steel Grade 316. Fixing Saddle 5mm thick, ASTM A 283 Gr. C. Round head bolt and nuts stainless steel Grade 316.

(vi) Provision for installation of radar gauges and RTDS multipoint temperature measurements with water bottom sensor for each tank with vertical guide pipes.

(vii) Leak detection systems at both draw-off sumps of each tank shall be per the API Standard 650.

(viii) Cathodic protection system for the tank bottom of each tank shall be as per API RP 651 and life span of minimum 15 years.

(ix) Spiral staircases for each new tank shall be consisting of 2 stringers, intermediate landings with supporting arrangement, hot dip galvanised gratings and handrail.

(x) Tank C Inlet and Circulation nozzles shall be opened to tank interior through flow diffusers to reduce flow speed as per the drawings provided.

(xi) Tank A and B roof centre vent shall be provided with a flame arrester.

(xii) Tank C shall have roof periphery vents and centre vent.

(xiii) Supply and installation all gate valves, DBB valves, expansion joints, flexible bellows etc.

(xiv) Earthing system shall be as per API Standard 650 Twelfth Edition, March 2013.

(xv) Leak detection system as per the API Standard 650 Twelfth Edition, March 2013 and NFPA-30 requirements shall be installed.

(xvi) Foam Top Pourer System shall be installed as per the NFPA-11 requirements.

(xvii) Water drencher System shall be installed as per the NFPA-30 requirements.

(xviii) Flow diffusers for tank internal piping (Inlet, Circulation & Outlet) shall be installed to minimize disturbance to IFR in Tank No. C.

(xix) Required vent systems for Tanks shall be compatible with tank filling and emptying rates while maintaining maximum allowable pressure variation as pe API 650 Twelfth Edition, March 2013.

6.2.4 WELDING PROCEDURE AND WELDER QUALIFICATION

a. The CONTRACTOR shall arrange for all inspection and testing of the welders, shell plate weldments, as per the requirements of section IX of the ASME code and any additional provisions of API 650 standards.

b. Qualification of Welding Procedure

Prepare welding procedure specification (WPS) for all category of welding that are intended to be carried out in tank repair work and perform tests documented by Procedure Qualification Records (PQR) to support the specifications as required by section IX of the ASME code and any additional provisions of API 650 standards.

c. Qualification of Welders

Conduct tests for all welders assigned to manual and semi-automatic welding to demonstrate the welders' ability to make acceptable welds in accordance with section ix of ASME code and API 650 standards.

6.2.5 INTERNAL FLOATING ROOF

6.2.5.1 Aluminium internal floating roofs on floats having their deck above the liquid, supported by closed pontoon compartments for buoyancy as per API Standard 650 Twelfth Edition, March 2013 Appendix H Section H.2.2 e inside the Fixed Roof Tank to minimize breathing losses and thereby reduce the overall Hydrocarbon loss from the tank.

6.2.5.2 Filling rate and emptying rate are given in design data.

i. <u>Material</u>

The material of floating roof is Aluminium. Aluminium shall conform to the requirements of Section 2 of ASME B96.1. Aluminium skin shall be 0.51 mm (0.020 in.) minimum nominal thickness. Aluminium floats shall be 1.3 mm (0.050 in.) minimum nominal thickness.

ii. <u>Peripheral Seals</u>

Primary Seals shall be vapour-mounted rim seal (flexible wiper seal) as per clause H.4.4.4.b of API 650 Primary seal material shall be able to use with gasoline. Secondary seal shall be flexible wiper seal.

iii. <u>Roof Penetrations</u>

Columns, ladders, and other rigid vertical appurtenances that penetrate the deck shall be provided with a seal that will permit a local deviation of ±125 mm (±5 in.). Appurtenances shall be plumb within a tolerance of ±75 mm (±3 in.).

iv. <u>Roof Supports</u>

The floating roof shall be provided with adjustable supports.

The height of the floating roof shall be adjustable to two positions with the tank in service to establish the low (operating) and high (maintenance) levels of the roof supports. The design of the supports shall prevent damage to the fixed roof and floating roof when the tank is in an overflow condition.

The low roof position shall be the lowest permitted by the internal components of the tank including shell nozzles with internal projections.

The high roof position shall provide a 2-m (78-in.) minimum clearance throughout the bottom, between the roof and the tank bottom.

Supports shall be fabricated from pipes and notched or otherwise constructed at the bottom to provide complete liquid drainage.

Steel pads or other means shall be used to distribute the loads on the bottom of the tank and provide a wear surface. Pads shall be continuously welded to the tank bottom.

Aluminium supports shall be isolated from carbon steel by an austenitic stainless steel spacer, an electrometric bearing pad, or equivalent protection.

v. Openings and Appurtenances

Ladder - Ladder landing pad shall be provided on the floating roof.

vi. Internal Floating Roof Pressure-Vacuum (Bleeder) Vents

Vents suitable to prevent overstressing of the roof deck or seal membrane shall be provided on the floating roof. These vents shall be adequate to evacuate air and gases from underneath the roof such that the internal floating roof is not lifted from resting on its supports during filling operations, until floating on the stored liquid. The vents shall also be adequate to release any vacuum generated underneath the roof after it settles on its supports during emptying operations.

vii. Tank Circulation Vents

Peripheral circulation vents shall be located on the tank roof and meet the requirements of H.5.3.3, so that they are above the seal of the internal floating roof when the tank is full. The maximum spacing between vents shall be 10 m (32 ft), based on an arc measured at the tank shell, but there shall not be fewer than four equally spaced vents.

a. The venting shall be distributed such that the sum of the open areas of the vents located within any 10 m (32 ft) interval is at least 0.2 m^2 (2.0 ft^2). The total net open area of these vents shall be greater than or equal to 0.06 m^2/m (0.2 ft^2/ft) of tank diameter.

b. These vents shall be covered with a corrosion-resistant coarse-mesh screen (13 mm [1/2 in.] openings) and shall be provided with weather shields (the closed area of the screen must be deducted to determine the net open vent area).

c. A centre circulation vent with a minimum net open area of 30,000 mm2 (50 in.2) shall be provided at the centre of the fixed roof or at the highest elevation possible on the fixed roof. It shall have a weather cover and shall be provided with a corrosion-resistant coarse-mesh screen (the closed area of the screen must be deducted to determine the net open vent area).

viii. Liquid-Level Indication, Overfill Protection, and Overflow Slots

To be provided

ix. Anti-Rotation and Centring Devices

The internal floating roof shall be centred and restrained from rotating. A guide pole with rollers, two or more seal centring cables or other suitable device(s) shall be provided as required for this purpose. The internal floating roof shall not depend solely on the peripheral seals or vertical penetration wells to maintain the centred position or to resist rotation. Any device used for either purpose shall not interfere with the ability of the internal floating roof to travel within the full operating elevations in accordance with H.4.1.1 of API Standard 650 Twelfth Edition, March 2013.

x. Manholes and Inspection Hatches

2 Nos, Floating-Roof Manholes shall be provided as per H.5.5.2 of Appendix H of API Standard 650 Twelfth Edition, March 2013.

xi. Gauging and Sampling Devices

The fixed roof and the internal floating roof shall be provided with and/or accommodate gauging and sampling devices. Sampling devices on the deck of the floating roof shall be installed beneath the fixed-roof hatch (as specified for this purpose).

The gauge pole pipes shall be extended up to the fixed roof. All such devices on the floating roof shall be installed within the plumbness tolerance of H.4.5. See C.3.14 for additional requirements applicable to gauge wells and poles. Along the 6" dia. gauge pole pipe, slots to be provided as required.

xii. Fabrication, Erection, Welding, Inspection, and Testing

Fabrication, Erection, Welding, Inspection, and Testing shall be as per Clause No. H.6 of API Standard 650 Twelfth Edition, March 2013.

a. Upon the start of internal floating roof installation, or concurrent with assembly within a tank under construction, the tank (interior shell and vertical components) shall be inspected by the floating roof erector. The purpose of this inspection shall be to confirm plumbness of all interior components, along with roundness and the condition of the shell (for the presence of damage, projections, or obstructions) to verify that the floating roof and seals will operate properly.

b. Any defects, projections, obstructions or tank tolerance limits (exceeding those defined in 7.5 of Appendix H of API 650), which would inhibit proper internal floating roof and seal operation, that are identified by the internal floating roof erector shall be reported to the CPSTL.

c. Deck seams and other joints that are required to be or vapour-tight as per H.4.1.3 of API 650 shall be tested for leaks by the shop or field joint assembler. Joint testing shall be performed by means of penetrating oil or another method consistent with those described in API standard 650 for testing cone-roof and/or tank-bottom seams.

d. The floating roof manufacturer shall supply all floating roof closures required for testing per H.4.1.3, H.4.1.7, H.4.3.1and H.6.2 of Appendix H of API standard 650 Twelfth Edition, March 2013.

e. Rivets, self-tapping screws, and removable sections are not acceptable for test plugs.

f. Any flotation compartment that is completely shop-fabricated or assembled in such a manner as to permit leak testing at the fabricating shop shall be leak

tested at the shop as well as retested in the field by the floating roof supplier/principal for all accessible seams. In the field assembly yard or in the erected position, the erector shall spot leak test 10% of the flotation compartments, whether shop- or field-fabricated.

g. The CPSTL may select the specific compartments to test and the test location, based on his visual inspections for indications of damage or potential leaks. Any leaking compartments shall be repaired and re-tested by the roof manufacturer. If the testing finds any leaks in compartments tested, except for those damaged by shipping, then 100% of the roof compartments shall be leak tested. Unless prohibited by safety concerns, leak testing shall be at an internal pressure of 20 kPa – 55 kPa (3 lbf/in.2 – 8 lbf/in.2) gauge using a soap solution or commercial leak detection solution.

h. Upon assembly and prior to a flotation test, the supplier/principal shall inspect to verify that the peripheral seal produces an acceptable fit against the tank shell.

xiii. Initial Flotation

Floatation test shall be conducted as per the API standard 650

a. Required vent systems for 3 Tanks shall be compatible with tank filling and emptying rates while maintaining maximum allowable pressure variation as per API 650 Twelfth Edition, March 2013.

b. Each IFR of the tank shall be installed with fire detection system including required instrumentation/electrical cables up to fire control room/alarming siren and integrated to the existing system.

6.2.6 EXTENSION OF EXISTING PRODUCT PIPING SYSTEM

6.2.6.1 General Requirements

The CONTRACTOR shall procure, supply, install pipeline extension for 3 tanks similar to the existing system. The extension shall be connected to the existing system and commissioned. The extension shall include valves, pressure relief valves, vents, flexible connections, pipeline sleepers, pipeline supports, valve platforms, drain pits etc.

The Extension of existing product pipeline system shall be designed to match with the existing system and as per the applicable codes and Standards.

This extension for the new 3 Tanks shall include laying of necessary piping, installation of valves, flexible connections, Flexible Hoses, Double Tide Expansion Joints pipeline sleepers, pipe supports, platforms, accessories, etc. and inspection & testing.

A Pressure relief system for inlet and outlet pipes as per the API Standard 520 Fifth Edition, August 2003 shall be installed.

6.2.6.2 Pipe laying

(i) Pipe laying shall be conforming to ASME B31.4 - Latest Edition: Pipeline Transportation Systems for Liquid Hydrocarbons and other Liquids.

(ii) Welding shall be conformed to API 1104: Welding of Pipelines ns related Facilities, ASME Section IX

(iii) Welding inspection shall be conforming to ASME Section V and Section VIII Division

(iv) Railroads and Highways crossings shall be conformed to API recommended practice 1102 seventh edition, December 2007.

(v) Piping Routes

a. Piping shall be routed as per the drawings provided for the shortest possible run with minimum number of fittings consistent with provision for expansion and flexibility.
b. The assembly, removal and support of piping and equipment shall also be taken into consideration.
c. Piping, which are run on overhead supports or on sleepers, shall generally be changed in there elevation when there is a change in run direction.
d. Piping shall be generally grouped on pipe sleepers, minimum height between ground and the bottom of pipe shall be 300 mm.
e. When piping at grade is required to cross road, culvert or casing shall be used. Supports or on sleepers, shall generally be changed in their direction.
f. By-Passes of Piping, By-passes of piping around equipment, in-line instrument, etc. Shall be provided to the extents shown on the P&ID.

(vi) Piping flexibility

a. Provision for thermal expansion shall be made in accordance with ASME B31.3 under following Conditions.
b. Piping systems shall be analyzed for expansion, contraction, differential settlement, relief valve reactions, and for effects due to weight, wind and other mechanical loading if required.
c. Piping flexibility shall be provided by change of direction in the piping using bends, loops or offsets. Vertical loops shall be avoided.
d. Forces and moments due to weight, thermal loads and other loads imposed on the equipment nozzle must not exceed the allowed loads for the equipment.
e. Directional anchors and guides shall be used to protect terminal equipment or to direct expansion into the bends, expansion loops, expansion bellows.
f. Pipe guides shall be used to prevent buckling of long piping runs and on both side of the loop which avoid shifting the line sideways.

(vii) Vents and Drains

a. Venting and draining of the piping systems shall generally be accomplished through vessel and/or equipment connected.
b. Self-renting and self-draining devices in piping shall be provided to the extent as shown on the P&ID.
c. Above ground lines shall have vents at highest points and drain at lowest points, if necessary for operation. Vents and drains shall be sizes as follows:
d. Vent and drains shall be size as follows

Pipe Size NPS	**Vent size NPS**	**Drain Size NPS**
Up to 4”	¾”	¾”
6”	¾”	1”

8" to 14"	¾"	1 ½"
Above 14"	¾"	2"

(viii)Piping Supports

a. Piping supports shall not block accesses nor interfere with access.
b. Piping support layout should also allow for removal of pipe work if expected to be necessary for maintenance of equipment.
c. Saddle support for pipes 14" and above all other pipe below 12" supports to have an l" pipe between sleeper and pipe.

(ix)Pit and Manhole

a. Manhole and sealed manhole shall be made of reinforced concrete , the distance two well is generally 30 m (except special).
b. Valve pit interceptor etc. also shall be made of reinforced concrete.

(x) Pipe bedding

a. When excavating the bed, soil may be disturbed and the bed should be handled manually.
b. For steel pipe bedding, the steel pipe shall be laid on a fresh water sand depth of sand 100mm.
c. For U-PVC pipe bedding, the pipe shall be laid on a bed fresh water sand, the depth of sand shall be l00mm and covered with a minimum l50mm layer of fresh water sand.

(xi)Accessibility

Steel Platforms shall be provided to access valves, oscillating monitors, Foam manifolds, over pass pipelines, dykes etc as per specifications and drawings.

(xii) Minimum overhead clearances

Above main roads : 6.0 m

For usual passage of personnel : 2.5 m

Area without personnel access : 2.1 m

(xiii) The minimum horizontal clearance

Main road width : 7.0 m

Road width for truck : 6.0 m

Road width for personnel : 2.0 m

For passage of personnel : 0.8 m

6.2.6.3 Line pipes

Line pipes shall be conforming to

(i) Third Party inspection shall be conforming to BSEN 10204 Section 3.2 by a reputed institution such as Lloyds, S.G.S., Bureau Veritas, ABS.

(ii) Nominal Size of Piping 1-1/4". 3-1/2" and all odd size of 5" and over shall not be applied except Equipment furnished with connections to these sizes shall be adjusted to a larger standard size adjacent to the equipment by means of a special

flange or reducer.

(iii)Pipes shall be selected as per following Pipeline Schedules

Pipe Diameter	Schedule
½”	SCH80
¾”	SCH80
1”	SCH80
1 ¼”	SCH80
1 ½”	SCH80
2”	SCH80
2 ½”	SCH40
3”	SCH40
4”	SCH40
6”	SCH40
8”	SCH40
10”	SCH40
12”	SCH40
14”	SCH40
16”	SCH40
18”	SCH40
20”	SCH40

(iv)Third Party inspection shall be conforming to BSEN 10204 Section 3.2 by a reputed institution such as Lloyds, S.G.S., Bureau Veritas, ABS.

6.2.6.4 Pipe Fittings

Pipe fittings shall be conforming to ASTM A234: Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service and, ASME B16.9: Factory-Made Wrought Butt-welding Fittings.

(i) Elbows, Bends and Mitres

a. Changes in direction of piping shall generally be made with elbows.
b. Pipes indicated below may be cold bent at construction field instead of elbows.
c. Bend radius of Carbon steel pipe equal or below 3/4"shall generally be 5 times the nominal pipe size (R=5D) unless otherwise specified.
d. R=5 D radius elbows shall generally be applied for piping of 2" and over except where design requirements dictate the application of short radius elbows.

(ii) Reducers

a. Change in piping sizes shall generally' be made with reducers.
b. Selection of concentric or eccentric type reducer shall be decided considering with each condition.

(iii)Branch connections

a. Branch connections of piping shall be made with smooth tees. Fabricated tees, half couplings, Welding outlets etc. or welded pipe-to-pipe connections.
b. When welded pipe-to-pipe connection is applied, piping shall be designed so that the angle of intersection between the branch and the run is not less than 45 degrees.

(iv) Flanges

Flanges shall be applied for piping connections at flanged equipment nozzles and inline piping elements such as valves, strainers, instruments, etc.

(v) End closures

Piping ends shall be closed with caps or blind flanges.

(vi) Blanks

Blanks shall be provided to the extent as shown on P&lD in order to realize complete isolation of piping systems,

(vii) Strainers

a. Strainers shall be provided to the extent as shown on P&lD.
b. Temporary conical strainers or wire nets for the purpose of flushing shall be provided in suction lines of pumps and compressors where there is no permanent strainer.
c. Strainers will be Y-type socket weld for l ½" nominal size and below.
d. Strainers will be T-type flange for 2" nominal size and over. Dimensions shall be in according to manufacturer's standard.

6.2.7 PAINTING AND CORROSION PREVENTION

6.2.7.1 The CONTRACTOR shall Grit/ Sand blast and paint bottom underside, tank interior bottom and 1.5m height of bottom most shell course, roof structure, interior roof and 1m height of top most shell course and tank exterior for Tanks No. A, B and C.

The paint systems shall be as per following standards.

External coatings : ISO 12944: 2018- Paints and varnishes — Corrosion protection of steel structures by protective paint systems —Part 5:Protective paint systems, Environmental class C5.

Internal Coatings including Tank bottom plate underside : ISO 16961:2015 - Petroleum, Petrochemical and Natural Gas Industries - Internal Coating and Lining of Steel Storage Tanks.

6.2.7.2 Surface Preparation

All the surfaces except galvanized surfaces which are to be painted to be blast cleaned to conform to Swedish Standard SA 2 ½ by grit blasting.

6.2.7.3 Tank Bottom Underside Coating System (Coating System - 1)

The undersides of the bottom plates are to be painted after grit blast cleaning specified under Clause 6.6.4.6. Approval for painting to be obtained as described in Clause 6.6.4.7.

(i) **Primer**

a) An Epoxy primer shall be provided.
b) The primer shall be compatible with Carbon Steel which is abrasive blast cleaned to a visual standard in accordance with ISO 8501-1, SA 2 ½ near white metal finish.
c) The primer shall be compatible with the coating system to be applied over it.

d) The DFT shall be 60 µm.
e) Method of Application method shall be Air Less Spray.

(ii) **Coating System - Thin Film Chemically Resistant Epoxy Polyamine Adduct-Cured, Anticorrosive, Water-Resistant Coal Tar Tank Coating.**

a) The coating system shall be as follows.

Paint System	**Adduct Cured Coal Tar Epoxy**
No. of Coats	2 or 3 nos.
Minimum Dry Film Thickness per Coat	100 µm
Minimum Total Dry Film Thickness	300 µm

b) The coating system shall be applied on Primer coating and it shall be fully compatible with the Primer
c) Method of Application method shall be Air Less Spray.
d) The Coating system shall be fully resistant to refined petrochemicals including Diesel, Gasoline, Kerosene, Fuel Oil, Jet Fuel and all the additives such as MTBE, Ethanol, GTBE and other derivatives and seawater.

6.2.7.4 Tank Interior Coating System (Coating System - 2)

The entire roof structure and 1 meter height of the top most shell course from the roof shall be painted, and under side of the roof plates shall be painted before plates are installed and touch-up paintings shall be done on welding joints as necessary and the entire bottom of the tank interior and the bottom most shell course up to 1.5 meter height from the bottom to be painted as above, after grit / Sand blast cleaning. Application of paint and obtaining of approval for painting shall be carried out as described.

Interior Coating system shall comply with ISO 16961:2015: Petroleum, Petrochemical and Natural Gas Industries - Internal Coating and Lining of Steel Storage Tanks.

(i) **Primer**

a) An Epoxy primer shall be provided.
b) The primer shall be compatible with Carbon Steel which is abrasive blast cleaned to a visual standard in accordance with ISO 8501-1, SA 2 ½ near white metal finish.
c) The primer shall be compatible with the coating system to be applied over it.
d) The DFT shall be 60 µm.
e) Method of Application method shall be Air Less Spray.

(ii) **Coating System - Thin Film Chemically Resistant Epoxy Phenolic Tank Coating**

a) The coating system shall be as follows.

Paint System	Amine cured Phenolic Epoxy
No. of Coats	2 or 3 nos.
Minimum Dry Film Thickness per Coat	100 µm
Minimum Total Dry Film Thickness	300 µm

b) The coating system shall be applied on Primer coating and it shall be fully compatible with the Primer.

c) Each coat shall be Light Grey or Light Green colour and there should be contrasting colour shades between each coat.
d) Method of Application method shall be Air Less Spray.
e) The Coating system shall be fully resistant to refined petrochemicals including Diesel, Gasoline, Kerosene, Fuel Oil, Jet Fuel and all the additives such as MTBE, Ethanol, GTBE and other derivatives and seawater.

6.2.7.5 Tank Exterior Coating System (Coating System - 3)

Exterior Coating system (for shell exterior surface and roof external surfaces with all attachments, Stairway and its supportive structure, hand rail and crown hand rail with all attachments including stanchions, Piping systems of foam top pourer system and water drencher system, rim air vents and tank internal piping system of drawoff sump) shall comply with ISO 12944/2018, C5 category with minimum High durability class (15 -25) years of durability.

1 m band on tank exterior of bottom most shell course shall be painted with additional 100 microns intermediate coat before finish coat to accomplish total overall thickness of 360 microns.

Tanks shall be marked with tank identification number and CPSTL logo as directed by the Engineer.

(i) **Primer**

a) An Epoxy primer shall be provided.
b) The primer shall be compatible with Carbon Steel which is abrasive blast cleaned to a visual standard in accordance with ISO 8501-1, Sa 2 1/2 near white metal finish.
c) The primer shall be compatible with the coating system to be applied over it.
d) The DFT shall be 60 µm.
e) Method of Application method shall be Air Less Spray.

(ii) **Exterior Coating system**

Coating System shall be as follows.

Primer Coat	Zinc Rich Epoxy (Coating Thickness 60 µm to 80 µm)
Intermediate Coats (1 or 2 coats)	Epoxy
Top (Final) Coat	Aliphatic Polyurethane
No. of Coats	3 to 4 nos.
Minimum Total Dry Film Thickness	260 µm

a) There should be contrasting colour shades between each coat.
b) The coating system shall be applied on Primer coating and it shall be fully compatible with the Primer
c) Method of Application method shall be Air Less Spray.

d) Coating System shall be fully resistant to abrasion, UV and adverse weather conditions.
e) Coating system durability shall be 15 to 25 years period.
f) Recoating interval of top coating shall be unlimited.

6.2.7.6 Above Ground Pipes

(i) The surface shall be inspected and, if required pre cleaned according to SSPC-SP-1 specification to remove oil grease and /or loosely adhering deposits. Visible oil and grease shall be removed by use of a suitable solvent. Exterior Coating system shall comply with ISO 12944/2018, C5 category with minimum High durability class (15 -25) years of durability.

(ii) Paint system shall be as per clause 6.2.7.1, 6.2.7.2, 6.2.7.5, 6.2.7.8, 6.2.7.9, 6.2.7.10, 6.2.7.11 and 6.2.7.12.

6.2.7.7 Underground Pipes

(i) The pipe surface shall be inspected and, if required pre cleaned according to SSPC-SP-1 specification to remove oil grease and /or loosely adhering deposits.
(ii) Visible oil and grease shall be removed by use of a suitable solvent.
(iii) Exterior steel pipe surface shall be abrasive cleaned to achieve a commercial blast cleaned surface as defined in Swedish Standard SA 2 ½.
(iv) The primer shall consist of rubber and synthetic resins in solvent to be of the non-flammable tape suitable for machine and hand application similar to POLYKEN type 1029 or equivalent.
(v) Inner wrap shall consist of polyurethane backing with butyl rubber-based adhesive designed for site manual or machine application. The inner wrap shall be applied on the primed steel pipe to deliver a superior bond.
(vi) The material shall provide excellent compatibility when applied over seamed spiral welded or extruded pipe. Inner wrap Polyken Type 980 or equivalent shall be used.
(vii) Outer wrap shall consist of polyethylene film with an elastomeric adhesive to provide a complete bond between the inner and outer wrap. Polyken type 955 or equivalent shall be used. Colour is yellow.

6.2.7.8 Solvents

Compatible and manufacture approved solvents in quantities as specified in the manufactures datasheets shall be supplied for mixing each product in the coating systems.

6.2.7.9 Other Requirements

(i) Coating Composition

a) The paint shall not contain metallic zinc, Aluminium, lead, cadmium, copper or copper alloys **for internal coating systems**.
b) The paint shall not contain metallic Aluminium, lead, cadmium, copper or copper alloys **for external coating systems**.
c) The colour is left to the discretion of the manufacturer but it shall be sufficiently different to distinguish it from other coats in the same system. The final finish colour shall be as per clause 6.5.4.10.

d) It is the manufacturer's responsibility to ensure that the paint shall not contain ingredients which may be harmful during application or subsequent removal when operations are carried out in accordance with the manufacturers' instructions.

(ii) Shelf Life

The paint, when stored in the original, sealed containers at a temperature between 0 and 35°C, shall retain the properties for a period not less than 12 months from the date of dispatch by the Supplier. The age of materials components shall not exceed the recommended shelf-life as limited by the manufacturers.

(iii)Curing

Curing time shall be dependent on ambient temperature only.

(iv)Application Relative Humidity

Maximum relative humidity approved by the manufacturer shall be not less than 85%.

(v) Documents

a) Comprehensive paint system detail report including all technical information, shall be submit along with the bid.
b) Conformation of the paint system from paint manufacture.
c) Product Data Sheets (PDS) and Safety Data Sheets (SDS) shall be supplied for each and every product in the coating systems.

6.2.7.10 Details of application and approval

(i) All painting work shall be done as per the manufactures' "datasheet". The whole area specified above to be painted with primer, intermediate and finish paint. The primer paint is recommended to apply by Air Spray or Airless spray. The intermediate and finish coats are recommended to apply by Airless spray.
(ii) Stripe coating 3 times on welding joins & sharp edges before each paint code and other required are to be stripped coated as required.
(iii) Required overall paint thickness should not be less than 360 microns DFT for under sides of roof and roof structure, 360 microns DFT for tank interior and 210 microns DFT for tank exterior/stairway/handrails while first coat, intermediate coat and final coat thickness to be not less than what is specified.
(iv) Approval for painting should be obtained from the Inspection Engineer of CPSTL or his representative as follows.
    a) Prior to application of first primer coat after satisfactory cleaning of surfaces.
    b) Prior to application of first intermediate coat after applying the required thickness of primer.
    c) Prior to application of first finish coat after applying the required thickness of intermediate coat.
    d) Required total DFT indicated in specifications to be applied and the first coat of Paint shall be applied as soon as possible after surface preparation is approved by Engineer.
    e) The preparation of paint before application is to be done as per the instruction stated by the paint manufacturer.
    f) Time interval between two coatings shall comply with paint manufactures instructions.
    g) The Engineer reserves the authority to accept or reject.
    h) Prepared surface before painting depending on his observations.

i) Application of paint depending on the preparation of paint and the weather.

Painting carried out under doubtful weather condition is the responsibility of CONTRACTOR. If any painting is found to be unacceptable the particular surfaces shall be made paint free and repainted at CONTRACTOR's expense.

6.2.7.11 Hot dip Galvanising

(i) Studs, Bolts and nuts, Steel pipes used as Cable Guides, Supports for instruments, and Gratings for platforms and steps of the stairway in Tanks shall be hot dip galvanized.

(ii) All hot dip galvanizing work shall conform to ASTM A 123 or BS EN ISO 1461:2009. Average mean coating thickness of galvanizing is 70 microns for lids of rim air vents and 85 microns for all other pipes, fittings, flanges, supports and gratings.

(iii) Touch up painting with Zn rich paint shall be attended on the galvanized surfaces wherever required after installation.

(iv) Certificate from the galvanizing company stating that all the specifications of the Procurement document were met shall be submitted to CPSTL after completion of galvanizing work.

6.2.7.12 Painting Colours

The painting colours to be used will be as specified in the following table. However, the Employer could advice his preferable colour. Prior approval from CPSTL shall be obtained for the top Coat.

Description	**Colour**
Tanks Interior	1st Coat : Light Gray 2nd Coat : Light Green
Tanks Exterior	Light Gray (RAL 7035)
Fire Water pipe lines On the Ground On the Tank	 Red (RAL 3000) Aluminium
Fire Water Strainers	Red (RAL 3000)
Top Pourer, Foam Pipelines	Yellow (RAL 1003)
Other Pipes, Valve Body	Light Gray (RAL 7035)
Valve Handle	Blue (RAL 5012)
Steel Structures / Platforms	Gray (RAL 7000)
Hand Rails	Yellow (RAL 1003)
Tank Bottom (External Ring including Annular plate External)	Black
Fire Water pipe lines	Red
Pumps	Gray
Motors	Blue
Foam Pipelines	Yellow
Other Pipes / Valve Body	Gray

Valve Handle	Blue
Steel Structures / Platforms	Gray
Hand Rails	Yellow
Tank Bottom (External Ring including Annular plate External	Black

6.2.8 SYSTEMS INSTALLATION & INTEGRATION

6.2.8.1 Extension of Existing Oily water System

(i) The CONTRACTOR shall procure, supply and install an extension of oily water system for 3 tanks similar to existing system. The extension shall be connected to the existing Oily water lift pump pit adjacent to Tank No. TK-14.

(ii) The extension for Tank-A and B shall include oily water collection points, pipeline changeover valve arrangement (*to direct collected water through oily water collection points and yard inside the dike to oily water system or storm water system*) and , Valve pits, Manholes with Ductile Iron covers, Interceptor etc.

(iii) Extension of existing oily water system shall be designed to match with the existing system and as per the applicable codes and Standards. This extension for the new 3 Tanks shall include laying of necessary piping, installation of water changeover valve system with piping to direct storm water to drains and contaminated water to oily water system, required platforms, laying concrete blocks around the tanks, constructing pipeline drain pits etc. and inspection & testing.

(iv) The extension for Tank-C shall include oily water collection points, pipeline changeover valve arrangement (to direct collected water through oily water collection points and yard inside the dike to oily water system or storm water system) and , Valve pits, Manholes with Ductile Iron covers and required piping up to the oily water manhole near Tank No. 13.

6.2.8.2 Extension of Existing Fire Detection and Suppression System

(i) The CONTRACTOR shall procure, supply, and install extension of Fire Detection and Suppression system for 3 tanks similar to the existing system and as per NFPA standard requirements. The extension shall be connected to the existing system and commissioned.

(ii) Fire fighting piping system include laying of necessary piping, installation of Wet Barrel Hydrants, oscillating ground water monitors, Foam Manifolds, Hose cabinets, required platforms etc. and inspection & testing.

(iii) Foam top pourer systems include laying of necessary piping, installation of top pourer units and inspection & testing. The top pourer piping system shall be painted as per above ground pipeline painting specifications.

(iv) Water drencher systems include laying of necessary piping, installation of sprinkler nozzles and inspection & testing. The water drencher piping system shall be hot dip galvanised.

(v) Extension of existing Fire suppression System for new 3 tanks consists water drencher (Sprinkler) system and foam top pourer system installed on tanks, foam manifolds, Motor Operated Valves for roof and shell in each tank and integration with

the existing MIMIC panel at Fire Control Centre etc.

(vi) Extension to 16" Fire water Ring pipeline shall be installed with isolation valves, Wet barrel hydrant, oscillating monitors, Break glass and fire alarm call points, hose cabinets, 3 nos. mobile foam units and other necessary equipment as required.

(vii) All the systems shall be designed to match with the existing system and as per the applicable codes and Standards published by National Fire Protection Association (NFPA) and all other relevant standards.

6.2.8.3 Extension to the Instrumentation & Electrical System

(i) The CONTRACTOR shall procure, supply, install and commission extension of Automatic Tank Gauging System (ATGS) for 3 tanks similar and compatible to the existing system. The extension shall be connected and integrated with existing ATGS including PLC system and SCADA system. The extension shall include Radar Level Gauge, Multipoint Temperature Transmitter with water bottom sensor, Pressure Transmitter, Level switches for Level High & Level low, communication interfacing devices, stilling wells, Process connection flanges, GI conduits for cables, any other intermediate devices etc. The CONTRACTOR is advised to inspect the existing system and devices before submitting the bid since the new items should be compatible with the existing system.

(ii) The CONTRACTOR shall procure, supply, install and commission of Gas Detection system including minimum 03 nos. Gas detectors for 10,000 m3 Petrol Storage tank and integrate with the existing alarming panel in the Fire Control Centre.

(iii) The CONTRACTOR shall procure, supply and install intermediate junction boxes, Zone barrier systems, surge protection devices, control and power cables etc. for all the instrumentation and electrical works.

(iv) The CONTRACTOR shall deploy a comple011

(v) y new cable network for the interconnection of the components of the 03 new tanks and all the work involved such as opening of existing cable trenches, constructing new trenches, laying cables and cable termination.

(vi) The CONTRACTOR shall procure, supply, install and commission of 1 no. Explosion Proof type, 16A SPN+E industrial receptacle and 1 no. Explosion Proof type, 63A TPN+E industrial welding receptacle with proper glands including the male sockets, Junction boxes and required switchgears with accessories in between Tank-A and B.

(vii) The CONTRACTOR shall procure, supply, install and commission of 2 nos. High Pole lighting having height of 20m, similar to existing design and capacities. Contractor

The design shall include a foundation design (typically a reinforced concrete foundation) capable of supporting the pole and withstanding overturning moments. Anchor bolt details shall be provided.

The high mast lighting system shall be designed to provide uniform illumination for large, open areas such as tank farms, truck loading racks, and pipeline corridors within the classified hazardous area of the petroleum installation. All components, from the pole structure to the electrical system, shall be engineered for maximum safety, reliability, durability, and ease of maintenance in a corrosive environment.

A permanent, full-length ladder shall be provided to allow safe access for maintenance of the lowering system and internal components. The ladder is not intended for routine ascent to the top but for occasional authorized access.

- **Technology:** High-efficiency LED.

- **Wattage:** typically **150W** per fixture with 4 nos. of total fixtures in each high pole light column, selectable based on the specific luminance requirements of the target area.
- **Performance:** They shall maintain the same performance specifications as the primary luminaires (e.g., IP66 rating, 4000K-5000K color temperature, hazardous area certification).

The pole shall be a tapered, tubular, round, monolithic steel pole. Pole shall be fabricated using high-strength, low-alloy structural steel conforming to ASTM A572 Grade 50 or equivalent. The pole shall be manufactured from a single plate, cold-rolled and automatically welded along the full length with a single longitudinal weld. Weld quality shall be certified.

The interior of the pole shall be thoroughly cleaned and coated with a high-quality, moisture-resistant protective coating. The exterior surface shall be hot-dip galvanized in accordance with ASTM A123. Following galvanization, a complete system of epoxy-polyester hybrid powder coating of minimum 80 microns thickness shall be applied in a specified color (e.g., Light Grey).

6.2.9 TESTING

6.2.9.1 Tank Foundations and Structures

(i) The CONTRACTOR shall carry out required testing and inspection to determine the integrity and strength of piles and tank foundation as required.

(ii) The CONTRACTOR shall carry out field density and Dynamic Cone Penetration (DCP) test in order to ensure the compaction of ABC layer.

(iii) Pile testing

a. Static load test of piles (4 Nos. piles per tank) as per CIDA/SP/101, 1st Edition-March 2016
b. Integrity Testing of Piles as per Clause-6.1 of CIDA/SP/101, 1st Edition-March 2016 - 100% of piles
c. Pile Dynamic Analyzer Testing as per Clause-6.2 of CIDA/SP/101, 1st Edition-March 2016 – 18% of total number of piles.
d. Investigation of failure and remedial action as per Section-8 of CIDA/SP/101, 1st Edition-March 2016
e. All the testing should be carried out third party and test reports to be provided accordingly

6.2.9.2 Steel Tank

(i) The CONTRACTOR shall carry out required testing and inspection of the tanks as per the API Standard 650 Twelfth Edition, March 2013 and all the other mechanical, electrical and instrumentation accessories. Required testing and inspection shall be supervised and certified by the Engineer/his nominee and Inspection Unit of CPSTL as appropriate.

(ii) Tank shell welds shall be tested by Radiographic examination. The report of radiographic examination of welds shall be submitted to the Engineer together with any other relevant information that may be required.

(iii) All inspection and testing of the weldments and the accessories shall be arranged by the CONTRACTOR as per the requirements of API 650 and API 653.

(iv) Plumbness & Roundness

a. The CONTRACTOR shall inspect tank Plumbness and Roundness after shell plate repairs and provide a report on tank Plumbness and Roundness through specialized inspection service provider who is acceptable to CPSTL before commencing hydro testing and painting.
b. The CONTRACTOR shall ensure Roundness and plumbness of the tanks are within acceptable limits of 7.5 of Appendix H of API 650.
c. Roundness and Plumbness inspection reports shall be forwarded to CPSTL in 3 copies and soft copy
d. The name and address of the 3rd party company should be given in the bid for evaluation purposes.

(v) Hydro test

a. The CONTRACTOR shall carry out tank hydro test for each tank. Tank hydro test shall be carried out according to the API 650 and API 653. Testing procedure to be agreed by the CONTRACTOR and CPSTL. CONTRACTOR shall source water from cannels adjacent to the boundary of CPSTL Muthuirajawela terminal or any appropriate method. CONTRACTOR shall supply required pumps, piping and other necessary equipment.
b. After hydro testing, Tanks shall be cleaned using fresh water which will be supplied by CPSTL. Cost of electricity for CONTRACTORs pumps and cost of CPSTL pumps running charges will be charged from the CONTRACTOR. For water calculated volume as per pump discharge rating

(vi) Floatation test for Internal Floating Roof

The CONTRACTOR shall carry out floatation test of the internal floating roofs for Tank No. A, B and C using water that will be supplied by the CONTRACTOR and the test shall be witnessed by the supplier/principal.

(vii) All other tests compulsory to be carried out as per the API 650 standard requirements.

6.2.9.3 Pipelines

(i) Butt welds on **above-ground** pipelines shall be radiographically tested for a minimum of 10% of the total joints on each section as per ASME B31.4 standard requirements.

(ii) Butt welds on **under-ground** pipelines shall be radiographically tested 100% of the total joints on each section as per ASME B31.4 standard requirements.

(iii) Pipeline sections shall be hydrostatically tested as per ASME B31.4 standard requirements.

6.2.10 INSPECTION

6.2.10.1 Third party inspection of plates and other relevant materials

(i) Third party inspection of steel plates, pipes, fittings, Valves etc. shall be carried out by a reputed third-party inspector approved by CPSTL, submission of inspection report to CPSTL and obtain approval before shipment.

(ii) Test certificates shall be in accordance with EN 10204 type 3.2.

(iii) Third party inspection of Internal Floating Roof shall be carried out by a reputed third-party inspector approved by CPSTL, witnessed by two CPSTL engineers and submission of inspection report to CPSTL and obtain approval before shipment.

(iv) Third party inspection of valves, fire-fighting equipment, tank gauging instrument shall be carried out by a reputed third-party inspector approved by CPSTL, submission of inspection report to CPSTL and obtain approval before shipment.

(v) The inspection charges and all expenses for CPSTL engineers including visa chargers, return air tickets, accommodation, internal transport and food will be arranged and borne by the CONTRACTOR.

(vi) The CONTRACTOR shall carry out required testing and relevant inspection to determine the integrity and strength of foundations as required

(vii) The CONTRACTOR shall carry out hydro test and other required testing and relevant inspection to determine the integrity and strength of steel tanks as required and as per API 650.

(viii) The CONTRACTOR shall carry out the calibration of Tank-A, B & C by a reputed calibration company acceptable to CPSTL and submit calibration charts and soft copies as directed by the Engineer.

6.2.11 CALIBRATION

After successful completion of hydro testing, the tank calibration is to be attended. The calibration and tabulations shall conform to API 2550, ASTM 1220. The tank calibration is to be carried out using one of the following methods by a third-party company acceptable to CPSTL.

- MPMS Ch. 2.2B – Calibration of Upright Cylindrical Tanks using the Optical Reference Line Method (ORLM)
- MPMS Ch. 2.2C – Calibration of Upright Cylindrical Tanks using the Optical Triangulation Method (OTM)
- MPMS Ch. 2.2D - Calibration of Upright Cylindrical Tanks using the Internal Electro Optical Distance Ranging Method (EODRM)
- MPMS (Manual of Petroleum Measurement Standards)

The name and address of the 3rd party company should be given in the bid for evaluation purposes.

Calibration of the tanks and submission of calibration charts and soft copies in the form of spread sheets for each tank. Weight of the Internal Floating Roof shall not be included in calibration chart and shall be mentioned separately.

The CONTRACTOR shall submit three sets of certified calibration tables to the Engineer on or before successful completion of the work.

6.2.12 SPECIFICATIONS FOR EQUIPMENT AND SYSTEMS

6.2.12.1 Instrumentation System (Automatic Tank Gauging System)

(i) Technical Specifications for Instrumentation System

This specification defines the minimum requirements for the Design, Supply, Installation and Commissioning of Automatic Tank Gauging System for the new 03 nos of Tanks. The intent of this specification is to establish guideline and minimum requirements for the Design, Supply, Installation and Commissioning of Automatic Tank Gauging System and not to supersede any relevant international standard or good engineering practice, but to supplement.

(ii) Applicable Standards

- API Manual of Petroleum Measurement Standards (MPMS)
- OIML R85
- NFPA Standards
- NEC Codes
- API Standards
- BS
- IEC Standards
- IET Wiring Regulations (BS 7671)
- IEEE Standards
- ISO Standards

(iii)Specifications for the Radar Tank Gauge

Type	Radar
Measurement Principle	Frequency Modulated Continuous Wave (FMCW)
Measuring Range	18m
Instrument Accuracy	±0.5mm
Accuracy Approval	OIML R85:2008/PTB/MNI
Area Classification	Zone 1, T4 gas group IIA / IIB
Ingress Protection	Min IP66
Lightning/Surge Protection	Required
Process Connection	Bidder to specify
Material of Construction	Antenna - Stainless Steel Transmitter Housing: Die-cast Aluminum
Ambient Temperature	10 – 55^{o}C
Relative Humidity	5 - 95% (non-condensing)
Power Supply	Bidder to specify
Communication	Bidder to specify

(iv)Specification for the Multi-point Temperature Transmitter with water level detection

Application	Measurement of average temperature and Water Bottom
Temperature Range	0-100^{o}C
Water Bottom Range	1m
No of Elements	9 <
Type	Pt100 (Min 3 wire) / Thermocouple

Element Spacing	Shall meet API MPMS 7.4
Area Classification	Zone 1, T4 gas group IIA / IIB
Ingress Protection	Min IP66
Lightning/Surge Protection	Required
Process Connection	Bidder to specify
Material of Construction	Transmitter Housing: Die-cast Aluminum
Ambient Temperature	10 – 55ºC
Relative Humidity	5 - 95% (non-condensing)
Power Supply	Bidder to specify
Communication	Bidder to specify

(v) Specification for the Pressure Transmitter

Application	Pressure measurement
Pressure Range	Bidder to decide as per the requirement
Accuracy	±0.05% FS
Type	Flange Mounted
Area Classification	Zone 1, T4 gas group IIA / IIB
Display	Back-lit LCD
Ingress Protection	Min IP66
Lightning/Surge Protection	Required
Material of Construction	Sensor – Stainless Steel Transmitter Housing - Die-cast Aluminum
Ambient Temperature	10 – 55ºC
Relative Humidity	5 - 95% (non-condensing)
Process Connection	Bidder to specify
Power Supply	Bidder to specify
Communication	Bidder to specify

(vi)Specification for the Tank Side Indicator

Application	Display Tank Measurements
Area Classification	Zone 1, T4 gas group IIA / IIB
Display	Back-lit LCD
Ingress Protection	Min IP66
Lightning/Surge Protection	Required
Material of Construction	Die-cast Aluminum/FRP
Ambient Temperature	10 – 55ºC
Relative Humidity	5 - 95% (non-condensing)
Power Supply	Bidder to specify
Communication	Bidder to specify
Accessories	Protective Hood

(vii) Specification for the Level Switches

Application	High / low level detection
Type	Float Level Switch
Medium	White Oil
Alarm Contacts	Standard Micro Switch
Repeatability Error	Less than 10 mm
Mounting	Horizontal
Process Connection	External Chamber
Area Classification	Zone 1, T4 gas group IIA / IIB
Ingress Protection	Min IP66
Lightning/Surge Protection	Required
Material of Construction	Die-cast Aluminum
Ambient Temperature	10 – 55^{o}C
Relative Humidity	5 - 95% (non-condensing)
Power Supply	Bidder to specify
Communication	Bidder to specify

(viii) Specification for the Gas Detection System

Application	Detection of combustible gases (Hydro Carbon) and Alarming
Gases	Combustible Gases and Vapor
Measuring Range	0 – 100 % LEL
Accuracy	Better than +/- 1% of full scale
Repeatability	+/- 2% FSD
Response Time	90% of gas reading (without filter unit) in between 10-12 seconds
Self-Check	Continuous self-check for immediate detection of internal failures
Area Classification	Zone 1, T4 gas group IIA / IIB
Display	LCD display with LED indication for Normal, Fault condition & Gas detected condition.
Ingress Protection	Min IP66
Lightning/Surge Protection	Required
Material of Construction	Powder Coated Aluminum housing and Stainless Steel Sensor Housing
Ambient Temperature	10 – 55^{o}C
Relative Humidity	5 - 95% (non-condensing)
Power Supply	Bidder to specify
Communication	Bidder to specify
Accessories	Annunciator Panel with control cards

(ix)Specification for the fire water Motor Operated Valve

Application	Fire Water System
Type	Electrical Actuator with butterfly valve
Pressure	20 bars

Local Operation	Push Button for Open and Close
Hand Wheel	For Manual Operation
Mechanical Limit Switch	Position OPEN/CLOSE
Tripping Torque	Opening and closing
Area Classification	Zone 1, T4 gas group IIA / IIB
Display	LCD display with LED indication for Open, Close, Fault condition
Ingress Protection	Min IP66
Lightning/Surge Protection	Required
Pipe Size	As per P & ID
Ambient Temperature	10 – 55ºC
Relative Humidity	5 - 95% (non-condensing)
Power Supply	Bidder to specify

(x) Specification for the Static Pressure Level Transmitter

Application	Level measurement of slop oil (white oil) pit
Level Range	As per the tank dimension
Accuracy	±0. 5% FS or better
Type	Flange Mounted on top of the underground pit
Sensor cable length	Bidder to decide
Area Classification	Zone 1, T4 gas group IIA / IIB
Display	Back-lit LCD
Ingress Protection	Min IP66
Lightning/Surge Protection	Required
Material of Construction	Sensor – Stainless Steel Transmitter Housing - Die-cast Aluminum
Ambient Temperature	10 – 55ºC
Relative Humidity	5 - 95% (non-condensing)
Process Connection	Bidder to specify
Power Supply	Bidder to specify
Communication	Bidder to specify

(xi) Surge Protection for Automatic Tank Gauging System

a. The proposed ATGS shall be equipped with suitable surge protection devices to protect all the system components including the data communication network against surges, transients induced either by switching of heavy electrical loads or lightning.

b. The surge protector shall be designed and tested as per the requirements of BS EN 62305/ IEEE C62.41 or any other internationally accepted standard.

(xii) Hazardous Area Classification

All the field instrumentation including primary sensors, field interfacing units, lightning arresters, etc. of the proposed system should be suitable for a hazardous area classified as ZONE 1, IIA/IIB T4 as per IEC 60079. The equipment and material of construction should be listed, certified, approved by one of the following internationally recognized

independent testing agencies.

- Factory Mutual (FM)
- Underwriter Laboratories (UL)
- Canadian Standards Association (CSA)
- British Approved Service for Electrical Equipment in flammable Atmosphere (BASEEFA)
- Physitealisch Technische Bunde Sanstolt - Germany (PTB)
- The research Institute of Industrial Safety, Ministry of Labor Japan (RIIS)
- ATEX

(xiii) Spares for Automatic Tank Gauging System

Bidder shall guarantee the availability of the spares for a minimum period of 10 years from the date of handing over the system. After the 10 years period, should an item become obsolete; the bidder shall inform the CPSTL about the replacement or an alternative in advance.

(xiv) Control Cables

a. All outdoor cables shall be XLPE/PVC insulated steel wire armored direct buried type and the cable glands shall be double compression type which shall meet the applicable hazardous area classification.
b. Make, Country of origin and country of cable manufacture shall be clearly indicated in the offer.
c. Manufacturer shall have at least 10 years continuous manufacturing process of offered type cables
d. Manufacturer shall be ISO 9001 certified company for offered type cable production facilities.
e. Type Test certificates shall be required for offered cables.
f. Cable drum and packing shall be seaworthy and cable ends shall be sealed.

(xv) Cable Trenches

All underground cables shall be laid in cable trenches. Backfilling of cable trenches shall be well compacted and the ground re-instated to its original grade and finish. The backfilling shall be free from large stones or other injurious objects to a level at least 150 mm above the cable protection covers. At road crossings, steel pipes shall be used as an additional protection. All underground cables shall be labeled at every 5 m interval. Only manual excavation is allowed because new cables are also to be laid along the same path as existing cables. It is the total responsibility of the CONTRACTOR to use latest cable laying standards and practices to avoid any damages to cables. Also, CPSTL will not accept any scale of cable damage and CONTRACTOR needs to replace the damaged cable at their cost.

6.2.12.2 Electrical System

(i) Specifications for Electrical System

The intent of this specification is to establish guideline and minimum requirements for the Design, Supply, Installation and Commissioning of Electrical system and not to supersede any relevant international standard or good engineering practice, but to supplement. The CONTRACTOR is deemed to be an expert in this field and will be responsible for the design, supply, installation and commissioning of fully functional and reliable Electrical power system using the state of art technology.

The single line diagram of the existing power system is attached.

(ii) Codes and Standards

Except where otherwise indicated in this specification the electrical power distribution/supply facilities shall conform to the minimum applicable requirements of the latest edition of the following standards and codes.

IEE	Wiring Regulations (BS 7671:2008)
IEC	International Electro-Technical Commission
BS	British Standards
IP CODE	Electrical Safety Code of the Institute of Petroleum
ISO	International Organization of Standardization
ANSI	American National Standards Institute
NEC	National Electrical Code (U.S.A.)
NFPA	National Fire Protection Association
API	American Petroleum Institute
NEMA	National Electrical Manufacturers Association
IEEE	International Electrical & Electronic Engineering

(iii)Ambient Conditions

Electrical equipment and materials shall be designed and manufactured for use under the following site conditions:

a. Ambient Temperature,
   Maximum : 40^{o}C
   Minimum : 20^{o}C
b. Relative Humidity
   Maximum : 95%
   Minimum : 76%

(iv)Classification of Hazardous Area

Classification of the hazardous areas for the project shall comply with IEC 60079-10. The extent of the hazardous area shall be in accordance with API-RP-500.

(v) Selection of Electrical Equipment in Hazardous Area

In general, the electrical equipment and wiring materials furnished shall be flameproof or explosion proof as required by the API Standards/NEC code and IEC Standards.

For the zone 2 location the electrical equipment and wiring materials shall conform to the requirements of the above standards and with the following specific interpretations.

a. Induction motors

   Squirrel Cage induction motors and motor without brushes or arcing contacts shall be selected without regard to explosion hazard.

b. Conduit Fittings and Junction Boxes
   Standard threaded type with covers and, gaskets.

Electrical equipment and materials for installation in hazardous areas shall be labeled, listed, certified, accepted or otherwise determined to be safe by an internationally

recognized testing authority such as one of the following:

BASEEFA	A British Approval Service for Electrical Equipment in Flammable Atmosphere (UK)
PTB	Physikalisch Technische Bunde Sanstolt (Germany)
UL	Underwriter's Laboratory (USA)
FM	Factory Mutual Research Corporation (USA)

Or any other testing or facility accredited to issue ATEX or IECEX certificate

(vi) Design Criteria

The design of electrical system shall be carried out, in order to provide safety to personnel and equipment during operation and maintenance, reliability of service, ease of maintenance.

The electrical system shall be designed similar to the existing electrical system. The CONTRACTOR shall inspect the existing electrical equipment, capacities, controlling system etc. at Muthurajawela Terminal.

(vii) Allowable voltage drops

The maximum allowable voltage drops, as a percentage of system nominal line to line voltage, shall be as follows:

a. Normal starting of motor, the voltage drop on the 400V bus : 15%
b. Main feeders : 2%
c. All motor feeders at Full load current : 3%
d. The cable voltage drop will be according to the IEEE standards

(viii) Ground Network

In general, a ground network shall be installed around all new Tanks, structures, distributions centers, Pumps, etc. The ground network shall consist of a main cable loop, above ground connection point, branch cable from loop to individual ground and necessary inspection point on all ground rods. Cable for the main loop will be minimum of 70sqmm and for branch ground runs shall be minimum of 25sqmm hard drawn, stranded copper.

a. Grounding system for instrumentation, instrument control boards and computers will be isolated from all other ground systems.
b. The lightning protection for the tank shall be according to the BS and NFPA or equal Standards.
c. The grounding wire direct buried underground and above ground shall be PVC insulated copper conductor.
d. Grounding rods shall be attached to the main cable loop at necessary interval to obtain a resistance to earth not exceeding 4 Ohms. Grounding rod shall be 17 mm diameter and copper-weld.

(ix) Distribution and Utilization Voltages

The following voltage levels shall be used.

a. Low voltage distribution for power :400/230 V, 3 Phases + N
b. Motors :400V, 3 Phases
c. Welding Receptacles :400V, 3 Phases
d. Convenience receptacles : 230V, single phase

e. Space Heater for motors and switchgears :230V single Phase
f. Low voltage switchgear control :230V, AC (UPS power)

(x) Wiring Method

All motor & feeder cables and control cables shall be installed in underground cable trenches and covered with concrete protection cable tiles. When cables cross the roads, heavy duty PVC conduits shall be used.

Cables shall be protected by galvanized steel conduit where directly buried cables are extended above ground or paved areas and rigid steel hot galvanized conduits shall be used for above ground and where underground, anticorrosive wrapping and protecting tapes are required as per carbon steel pipes. The minimum size conduit shall be 18 mm above ground except that 12 mm shall be used only for control panel wiring.

(xi) Motor Control Centre (MCC)

a. MCC shall be metal-clad, free standing and totally enclosed type; the minimum enclosure shall be IP55.
b. The MCC cubical should have a separate module for each motor and completely wired and marked at each accessory and terminal rows. The new MCC shall have direct on-line starters for each motor similar to the existing system.
c. Motor starter units shall be equipped with over current protection, short circuit protection, protection against single phasing and phase unbalance, ground fault protection etc.
d. Indicating lamps shall be provided on the front door for each module as red lamp for motor running indication; green lamp for motor stopped indication; amber lamp for motor overloaded / tripped indication.
e. Each motor starter module should be fully withdrawable and should have power and control circuit contacts. Each withdrawals module will have following three distinct positions showing the position indication.
   - Connected or service position-both power and control circuits are engaged.
   - Test position -power contacts disengage but the control circuits are engaged.
   - Withdrawn position -both power and control circuits are disengaged.
f. Each cubicle shall be of a dust and vermin-proof type suitable for operation in a tropical climate where no air conditioning facility is available. Its door is to be provided with gaskets. The degree of protection is minimum IP55.
g. The modules shall be as far as possible interchangeable.
h. Facility to be provided for direct terminating of power and control cables to each motor feeder module directly. All cable including mains supply cable shall enter the panel from the bottom. The bottom plate shall be removable for fixing cable glands.

(xii) Motors

a. All motors shall be suitable for the running characteristics of the driven machines.
b. Motor shall be suitable for normal starting torque, continuous operation at name plate horse power rating and have sufficient starting torque and thermal

capabilities to accelerate the connected machine to maximum speed without injurious heating when starting at 90% of rated voltage and from rated full load temperature.

c. All motors shall be of 3 phase squirrel cage induction type and all six terminals should be available at terminal box.
d. The motor enclosures shall be IP66 totally enclosed fan cooled (TEFC) type, and shall be suitable for outdoor use and relevant area classification. Motor insulation class shall be Class F
e. Full voltage starting is preferred for all motors.
f. Voltage drops in cables during starting must not exceed 15% of the motor rated voltage.
g. Motors shall be controlled from PLC system where the controlling philosophy shall be similar to the control of existing similar motors. In addition to automatic and remote control, "hand-off-auto" selector switch shall be installed at the local station near the motor.
h. All motors shall have ammeter on the front of each motor starter panel and in addition motor rated at and above 10 HP shall have ammeter in their local control station.

(xiii) Terminal Box

All terminal Boxes shall be made of cast iron, cast steel or 1/8 inch minimum thickness steel plate. Boxes shall be provided with gland, water tight and fully gasket.

(xiv) Electrical Power Cables

a. Sizes of cables shall be designed to cater the total actual load and 20 % extra capacity for the future expansions. Selection of required cable sizes for all applications shall be the responsibility of the CONTRACTOR.
b. Cables shall be made out of stranded Copper conductors, XLPE insulated, Steel Wire Armoured direct buried type and PVC sheathed according to BS 5467. The voltage rating shall be 600 / 1000 V.
c. The cable glands shall be double compression type which shall meet the applicable hazardous area classification.
d. Make, Country of origin and country of cable manufacture shall be clearly indicated in the offer.
e. Manufacturer shall have at least 10 years continuous manufacturing process of offered type cables
f. Manufacturer shall be ISO 9001 certified company for offered type cable production facilities.
g. Type Test certificates shall be required for offered cables.
h. Cable drum and packing shall be seaworthy and cable ends shall be sealed.
i. Cable installation and termination shall be done in accordance with the 17th edition of IET wiring regulations
j. Cable tray/ladder racks shall be provided in structural concrete trenches for incoming and outgoing cable and inter-panel connections, as appropriate for the method of cable routing for the building.

(xv) Cable trenches

The CONTRACTOR shall utilize the existing cable tranches for power cabling.

The drawings of the existing routs of trenches are attached.

6.2.12.3 Fire Fighting System

(i) **Design Considerations**

a. Unless otherwise specified, the latest edition of the following codes and standards shall be applied:
   - NFPA I Fire prevention Code
   - NFPA l0 portable Extinguisher
   - NFPA l 1 Foam Extinguishing System
   - NFPA l3 Sprinkler Systems
   - NFPA 14 Standpipe Hose System
   - NFPA l5 Water Spray Fixed System
   - NFPA l6 Foam Water Sprinkler & Spray System
   - NFPA 20 Centrifugal Fire pumps
   - NFPA 22 Water Tanks
   - NFPA 24 private Fire Service Mains-outside protection
   - NFPA 30 Flammable & Combustible Liquid Code
   - NFPA 196 Fire Hose
   - NFPA 194 Fire Hose Connections

b. Calculation design, supply, delivery and erection of the firefighting system is included in CONTRACTOR's scope of work.

c. All parts of tank gauges, venting devices, firefighting equipment, sampling devices etc. mounted on the tanks shall be installed by CONTRACTOR in accordance with manufacturer's instructions.

d. CONTRACTOR shall submit together with his offer, full description and illustrated catalogues of the equipment he intends to supply, together with manufactures names and reference limits.

(ii) **Specifications for Fire Fighting system**

a. Fixed Cooling Water Spray System

b. Fire Fighting Design shall be according to NFPA-30 Flammable and Combustible Liquids Code, NFPA-11 Standard for Low, Medium and High Expansion Foam, NFPA-15 Standard for Water Spray Fixed Systems for Fire Protection.

c. For the cooling of tanks in case of fire, CONTRACTOR shall apply all the piping and equipment as shown on the applicable drawings.

d. The number and size of water spray nozzles shall be determined during Fire Fighting Study in accordance with the manufacturer’s recommendation.

e. All tank shell and roof cooling system application rates shall be in accordance with NFPA applicable codes. A minimum application rate of 4.0 L/min/m2 of tank shell above liquid level (assuming tank is half full) for protection of the tank surface shall be applied. Water spray nozzles shall be in accordance with the following data:
   - Tank shell cooling nozzles
   - Type: Flat Fan
   - Fluid: Fresh water
   - Upstream Pressure 5.0 bars

f. Fixed cooling water spray system shall be provided for oil tanks
   - Shell of Tanks: 4 lpm/m2
   - Roof of Tanks: 0.25m3/hr/m2

g. The cooling water system shall be activated by a manually operated valve with sign board stating the purpose of the valve.

h. The motor butterfly valve with a sign board shall be activated manual in local and removed from the control room in the Fire Station.

i. The valve and signboard shall be located at about l5m away from the protected equipment.
j. Downstream of the shell cooling system valves, a hose connection shall be provided for water testing, flushing with fresh water and drainage. The above construction shall secure the effective flushing of the total cooling system.
k. The material of the whole piping shall be Carbon Steel (CS) and shall be hot dip galvanized.
l. Painted as per colour code.
m. Piping shall be totally flanged (welding is not allowed).

(iii)**Foam Fire Fighting System**

a. Foam system shall conform to NFPA 30, 11 and 13.
b. Semi-fixed top injection foam firefighting system shall be provided for oil Tanks
c. Discharge rate: 4.1 lpm/m2
d. Operating time: 30 minutes
e. Three discharge outlets for 15,000m3 each tank and two discharge outlets for 10,000m3 tank shall be supplied.
f. The piping for semi-fixed foam system shall be terminate on the outside of the band wall with connections suitable existing mobile foam firefighting equipment
g. CONTRACTOR shall verify the size of the foam makers, foam chambers and outlets in accordance with the foam solution flowrates and number of foam makers/chambers/outlets given and guaranteed by manufacturers' recommendations.
h. The material of the whole piping shall be Carbon Steel (CS) and painted as per colour code. Piping shall be totally flanged (welding is not allowed).

(iv)**Water Hydrant**

a. Water hydrants shall be provided along the area to be protected.
b. The maximum distance between water hydrants shall be 50-80 m.
c. Each outdoor water hydrant shall have the minimum discharge capacity of 945 lpm.
d. Fire Hydrant shall be supplied with two 2 ½" hose couplings and one 4 or 6 inch
e. Connection for fire truck and one inlet size of hydrant is 6 inch
f. Maximum Working Pressure: 16 Bar
g. Finish: Polyurethane or equivalent UV resistant paint RED to RAL 3000

(v) **Outdoor Fire Water Hose Cabinets**

a. Fire Hose cabinets shall be installed on the basis of one hose cabinet for every hydrant.
b. Each hose cabinet shall contain 2 nos. fire hoses, one straight and fog hose nozzle and wrench.
c. Cabinet shall be provided with "Break glass" Key Holder, Through ventilation and Drainage Holes.
d. Doors shall be mounted on lift-off hinges with neoprene weather seals.shoot bolts and locking handle.
e. Coating: polyester powder Coat, Red BS4800, E04, E53
f. Fire Hoses
   - Size: 2 ½"
   - Constructed with Low density Rubber with synthetic textile reinforcement
   - Maintenance free (No drying Required)
   - Highly Flexible
   - Ozone resistant
   - Resistant to abrasion, oil and chemicals
   - Kink Resistant

- Average Short length Burst Pressure: 45 barg
- Maximum Working pressure: 15 barg

(vi) **Oscillating Water Monitor**

a. The water monitors shall be provided for protection of tanks.
b. Inlet size of the fixed water monitor is 4 inch.
c. Water monitors shall be located at a minimum distance of 15 meters away from the protected equipment.
d. Performance
   - Max Recommended Working Pressure: 16 bar
   - Normal Minimum Working Pressure: 5 bar
   - Test Pressure: 24 bar
   - Max. Recommended Flow: 4,500 liters/min
e. Automatic Oscillation
   - Traverse : Variable from 45 to 120 degrees in 15-degree stages
   - Elevation :
     - Variable from +75 to -55 degrees over 180-degree traverse arc.
     - Variable from +75 to -55 degrees over 270-degree traverse arc
     - Variable from +75 to -20 degrees over 360-degree traverse arc

f. Oscillating Frequency: 8 cycles / minute at 7 bars
g. Flow Rate through water motor: 40 liters /min at 7 bars.
h. Construction
   Water passage: 80mm internal diameter
   Outlet connection: G2.5 (M) to BS 2779

(vii) **Foam Manifold**

a. Design: 4-way pumping in Breaching
b. Material: Body S.G. Cast iron to BS2789
c. Coating: Polyurethane or equivalent UV resistant paint RED to RAL 3000
d. Fittings: Gun Metal
e. Inlet Connections 2 ½" instantaneous Male to BS 336 with Cap & Chain
f. Outlet Connection: 6" ANSI 816 Class 150 Flat Face
g. Drain: 1"
h. Standard: BS 5041 part 3

(viii) **Mobile foam Extinguishers**

Three mobile foam cart extinguishers with hoses shall be supplied for each tank.

6.2.12.4 Materials shall be as per following Specifications

(i) **List of recommended manufactures – Mechanical, Electrical and Instrumentation works**

No.	Item	Country of Origin/Country of manufacture
1.	Plates, structural steel Pipes, fittings, flanges, nut & bolts, gaskets	European, UK, Japan, South Korea, Canada, South Africa or USA
2.	Pumps, Valves, Level gauge Dip hatch, Cathodic protection system	European, UK, Japan or USA

	Top Foam pourers Water sprinkle nozzles Fire detection system Hydrocarbon detection system, Flexible hose, Expansion joints Gaskets	

Note:

The reference made here to certain country of manufacturers' products and items identified by registered trademarks, this has been done for the sole purpose of defining and establishing standards of quality and performance and not with the intention of restricting the procurement of materials or fittings to a particular manufacturer.

(ii) **Carbon Steel Plates**

a. Material shall conform to ASTM A 573 Gr. 70 for shell plates and ASTM A 283 Gr. C for all other plates.

b. Identification: Heat/Batch number and material description shall be marked on the plates

c. Valid mill test certificate with the heat/batch numbers shall be provided in accordance with EN 10204 3.2 with the plates. The heat /batch numbers marked on plates should tally with that of the certificate for final acceptance at Ceylon Petroleum Storage Terminals Limited (CPSTL) Muthurajawela Terminal.

d. Tolerance in size, if any, should be mentioned with relevant standards for the purpose of evaluation.

(iii)**Carbon Steel Line Pipes**

a. Length: SD (Sigle Random length) for 3" dia. to 10" dia. pipes and length: DR (Double Random Length) for 12" dia. to 18" dia. pipes

b. Pipe Schedule: ½" to 2" - SCH80
2 ½" to 6" - SCH40
8" to 16" – SCH40
18" – SCH40

c. Construction: Seamless

d. Pipe End: Bevel ends (BE)

e. Material shall conform to API Standard 5L-Gr B or ASTM A 106 B.

f. Dimensions shall conform to ANSI B 36.10

g. Surface Coatings: Internally and externally uncoated.

h. Pipe End Protection: Both ends of pipe should have protective sleeves.

i. Identification: Heat/Batch number, SCH number, API or ASTM number, seamless and material description shall be marked on the pipes.

j. Mill Certificate shall be supplied in accordance with EN 10204 3.2 with Heat/Batch numbers or any other reference number marked on pipes as well as in the certificates.

(ii) **Carbon Steel fittings (Elbows, Tee's, Reducers)**

a. Pipe Schedule: ½" to 2" - SCH80

2 ½" to 6" - SCH40

8" to 18" – SCH40

b. Construction: Seamless

c. Pipe End: Bevel ends

d. Material shall conform to ASTM A 234 Gr. WPB.

e. Dimensions shall conform to ANSI B 16.9

f. Surface Coatings: Internally and externally uncoated.

g. End Protection: Ends of Fitting should have protective sleeves.

h. Identification: Heat/Batch number, SCH number, API or ASTM number, seamless and material description shall be marked on Elbows and Reducers

i. Mill Certificate shall be supplied in accordance with EN 10204 3.2 with Heat/Batch numbers or any other reference number marked on Elbows and Reducers as well as in the certificates.

(iii) **Carbon Steel Flanges**

a. Class 150, Slip on, Raised Face (RF)

b. Material shall conform to ASTM A 105 Normalised.

c. Dimensions shall conform to ANSI B 16.5.

d. Identification: ASTM number, ANSI Number, Class and material description shall be marked on the flange.

e. Flange should be marked with the ASTM specification grade identification symbol and ASTM specification number.

f. Mill Certificate should be supplied in accordance with EN 10204 3.2 with identification numbers or any other reference number marked on flanges as well as in the Certificate to check once the items are delivered to CPSTL Muthurajawela Terminal with reference to the items against the Mill Certificate.

(iv) **Nuts and Bolts**

a. Material of bolts be conformed to ASTM A 193 Gr.B 07 or BS 1506-621 Gr.A and materials of nuts shall conformed to ASTM A 194 Gr. 2H or BS 1506-162.

b. Threads should be in accordance with ANSI B 1.1 or BS 1580 Class 2A for bolts and class 2B for nuts.

c. Identification marks shall be available on items to conform above standards.

(v) **Gasket Materials**

a. Pressure Class – 150#
b. Nominal Working Temperature - 45^{o} C
c. Thickness – 4.5 mm

d. To use as packing for flanges of pipe lines and tank manholes for petroleum refined products such as Gasoline, Gas oil, Fuel Oil and Aviation Turbine.

e. Gaskets should conform to BS 7531, ASME B16.20, API 601 or equivalent.

f. Each Gasket shall be indelibly marked with the number of British ASME Standard, Dimensions and manufacturer's identification mark.

(vi) **Cast Steel Gate Valves (Class 150)**

a. Operational Conditions
   - Sizes equal or higher than 2"

- Pressure Class – 150 LB (Valves sizes on and above 2")
- Pressure Rating: 285 psig @ -20 to 100 ˚F
- Raising Stem Gear Operated (Valve Sizes 12" to 18")
- Raising Stem Manually Operated Hand Wheel (Valve Sizes below 12")

- Sizes below 2"
  - Pressure Class – 800 LB (Valves sizes ¾" and 1 ½")
  - Pressure Rating: 1973 psig @ -20 to 100 ˚F
  - Raising Stem Manually Operated Hand Wheel

b. Use for petroleum refined products such as Gas Oil, Gasoline, Kerosene, Fuel Oil and Aviation Turbine.

c. The valves should be of outside screw and york type with rising stem non rising hand wheel, bolted bonnet and with solid or flexible wedge type plain gate and should conform to followings.
   - Designed as per API 6D & API 600.
   - End flanges shall be raised face type and flange dimensions should conform to ANSI B 16.5.
   - Face to face dimensions should conform to ANSI B 16.10.
   - Valve inspection and testing as per API 598.

d. Materials of valve
   - Materials of component of the valve should conform to API 600.
     - Body and bonnet - ASTM A 216 Gr. WCB
     - Seat and Wedge facing - 13% Chromium Steel
     - Stud - ASTM A 193 Gr. B7
     - Stud Nut - ASTM A 194 Gr. 2H
   - Trim material should be specified and should conform to API 600 normal trim material (supplier should forward manufacturer's certificate conforming the same).
   - The materials of all parts of the valve to be specified according to ASTM standard.

e. Other Conditions
   - Method of packing should be indicated in the quotation or Pro-forma Invoice.
   - Valves should be shipped with gate closed and flange closed with suitable material or end caps.
   - Exterior surface (un machined) should be painted with suitable paint to prevent corrosion and machined or threaded surface should be coated with easy removable rust preventive coating.
   - The method of testing should conform to API 598 and valid test certificate should be supplied with the items and the supplier should mention in the quotation or Pro-forma Invoice whether this can be supplied.
   - Period of guarantee and the conditions of guarantee should be mention in the quotation.
   - The supplier should forward the copy of certificate of Authority to use official monogram of API and the originals of internationally published catalogues/literature relevant to the valve.
   - The supplier should forward all details mentioned above for evaluation purposes. The offers of those who fail to submit requested details will not be

- Considered for evaluation.

(vii) **Tank Pipeline Flexible Connections**

	Item	**16" Double Tied Expansion Joint**	**14" Double Tied Expansion Joint**	**12" Annularly Corrugated Flexible Hose**
1	Extended Dimension	2000 mm		1520 mm
2	Intended Use	To connect Steel Pipelines (Petrol, Diesel and Kerosene) into Atmospheric Above Ground Storage Tanks		
3	Operating Pressure	1.55 MPa Max.		
4	Operating Temperature	15 °C to 60°C		
5	Design Pressure	Design Pressure shall be Max. Operating pressure + Safety Margin		
6	Design Temperature	Design Temperature shall be Operating temperature +Safety Margin.		
7	End Connection	16" ASME B16.5 150# Raised Face Flange	14" ASME B16.5 150# Raised Face Flange	12" ASME B16.5 150# Raised Face Flange and Loose Flange at the other end
8	Materials	Flanges : ASME A105 or Equivalent Bellows : Stainless Steel 304 Center Spool : API 5L Grade B or equivalent Tie Rods : ASTM A193 Gr. B7 & ASTM A194 Gr.2H or equivalent Other Components : as per manufactures standards		Flanges : Stainless Steel 304 Bellows : Stainless Steel 304 Braid : Wire Braid Stainless Steel 304 Other Components : as per manufactures standards
9	External Coatings	Primer Coat : Zn rich Epoxy Primer Finish Coat : UV & Weather resistant Epoxy or Any other coating system proposed by manufacture having superior corrosion, UV and weather resistant properties.		As per Manufactures Standards
10	Trans- Displace	> 120 mm		
11	Motion	Universal (Axial. Lateral and Angular)		
12	Applicable Standards	EN 13445, EN 13480, EN 14917, BS EN ISO 10380 ASME VIII, Div. I, ASME B31.3, ASME B31.1, AD		

		2000 or EJMA, ASME B16.5, API 5L
13	NDT Requirements	According to PED 97/23 EC rules and regulations or equivalent international regulations
14	3rd Party Inspection	Third party inspection of Material, Pressure and NDT test by internationally reputed third party inspection organization acceptable to the CPSTL.

(viii) **Butterfly Valves**

- Operational condition:
  - Pressure Rating: ANSI Class 150 (285 psig @ 100^0F)
  - Operator: Ten position hand lever
  - Disk Alignment: Double offset
- Material
  - Body Type: Flangeless (Wafer Style)
  - Body Material: ASTM A 216 Grade WCB
  - Seat Material: Buna-N, PTFE
  - Disk Material: Stainless Steel
- Designed as per API Standard 609
- Operator: Six Position Hand Lever for 4" & 6" valve and gear operator for valves equal or above 8”
- Body coating of the valve should be Epoxy Power Coated
- Mill Certificate should be supplied in accordance with EN 10204 3.2 with identification numbers or any other reference number marked on flanges as well as in the Certificate to check once the items are delivered to CPSTL Muthurajawela Terminal with reference to the items against the Mill Certificate.

(ix) **Double Block & Bleed Valves**

General	Valve Type	Twin Seal Double Block and Bleed expanding plug Valve a) 16” b) 18”
	Valve Service	Refined Petroleum Products & Sea Water
	Operating Temperature	15°C to 60°C
	Pipeline Orientation	Horizontal
Design	Face to Face Dimensions	API 6D & ASME B 16.10
	Bore	a) 16” Valve- Reduced Bore b) 18” Valve - Full Bore
	Pressure Class	ASME B16.34 Class 150LB (PN20)
	Bleed System	Manual bleed and Thermal Relief upstream (fitted to the valve body)
	Flow Direction	Single Direction or Both Directions
	End Connection	Raised Face Flange ASME B16.5 (Serrated)
	Body / Bonnet Connection	Bolted Bonnet
	Stem	Rising Stem
	Stem Position	Vertical

	Drain Connection	Plugged
	Pressure Relief Connection	Required
	Plug	Dual Expanding
	Slips	Renewable & Retractable Slips - Slips with bonded and renewable resilient seals (Fluoroelastomer)
	Lifting Eyes	Required
	Locking Facility	Required
	Operation	Gear Box with Hand Wheel
Materials	Body	ASTM A216 WCB, WCC, ASTM A105 or better
	Cover/Bonnet	ASTM A216 WCB, WCC or better
	Plug	ASTM A216 WCB, WCC or better
	Slip	Ductile Iron Slips with Bonded Resilient Seals-Fluoroelastomer
	Seals	Fluoroelastomer
	Gaskets	Fluoroelastomer/Graphite
	Stem	ASTM A182 Gr F304/316 Or ASTM A564 Gr 630 or better
	Gland Packing	Graphite packing or better
	Fasteners	ASTM A193 Gr. B7 & ASTM A194 Gr. 2H or Equivalent
Coating	Internal	Sea Water and Abrasion Resistant corrosion protection coating
	External	UV and weather resistant corrosion protection coating
Marking on the valve	As per API 6D, ANSI/MSS-SP-25	
Codes and Standards (Complying All standards shall be their latest editions)	Design	API 6 D, API 600, API 599, ASME B 16.34
	Face To Face Dimensions	API 6d or ASME B16.10
	Flange Design	ASME B16.5
	Inspection Testing Standard	API598/API 6d
	Fire Safe Design	API 6 FA & API 607

6.2.13 TRAINING & WARRANTY

(i) After completion of all works, the CONTRACTOR shall box up Tank-A, B & C and hand over to CPSTL.

(ii) The CONTRACTOR shall submit Manufacturer's Warranty from the date of commissioning, in the name of CPSTL as follows;

a. 12 months warranty for pumps, valves, top pourer units tank gauging instruments and detection and suppression equipment.

b. 5 years warranty for IFRs

6.2.14 DOCUMENTATION

(i) Documentation to be submitted after Award of Contract

The following describes the minimum scope of information, documents, drawings, etc. to be submitted by the CONTRACTOR to the Employer after award of contract during the site construction. The Employer reserves the right to request from the CONTRACTOR such additional information, drawings, documents, etc. as may be reasonably required for proper understanding and definition of the project.

The CONTRACTOR shall provide softcopies and two (2) hard copies of all drawings, documentation and as-built drawings/documentation to be submitted by him.

Monthly progress reports shall be provided by no later than ten (10) days after the last day of each month.

Any revision of the project implementation schedule shall not be delivered later than fourteen (14) days after such revision.

(ii) Documentation to be submitted prior to Site Construction

All documents and permits required for site construction shall be submitted prior to site construction.

(iii) Documentation to be submitted during Site Construction

The following documents shall be submitted during site construction:

a. It is to be noted that for all major works not only in the site, but also for t hose works, which are located within CPSTL areas or related to facilities of such entities a method statement for the proposed works is to be included in the permit to work application along with the approved design review documentation at and specifics of the construction works and any associated risk evaluation for the relevant owner.
b. CPSTL will coordinate all temporary building permits or the no-objection certificates, as applicable, issued by the various departments or other relevant Governmental Authority to the CONTRACTOR in accordance with applicable Law, and all related permits, consents and approvals related to the construction of Project.
c. The CONTRACTOR shall submit to the Engineer drawings, diagrams, graphs, curves, calculations, schedules for information, review or approval as described in the Contract. The quality of all documents submitted shall conform to acceptable international practice.
d. The CONTRACTOR shall provide the calibration certificates of all calibrated equipment to the CPSTL.
e. Monthly progress brief reports - by no later than one (1) week after the last day of each month including S-curves showing the work progress. The minimum information shall be:
    - Engineering activities
    - Component and material purchase and receipt status
    - Construction activities
    - HSE
    - Trainings executed
    - Incidents
    - Accidents
    - Personal on site
    - Number of staff
    - Number of local staff

- 4-week look ahead schedule
- Recommendations for improvement
- Project graphs
- Layout drawings which shall show the work status
- S-curves which shall show on a monthly base the status of the works (planned and actual as well as cumulated) for the project.

(iv) Final Documentation

The CONTRACTOR shall submit all final documentation, including as-built drawings, engineering reports, calculations, Spare part lists, operation and maintenance manuals, inspection and testing reports, welding records, procurement documentation and catalogues. The final documentation shall comprise at least the following:

a. The above-mentioned documents
b. All As-built drawings
c. Site safety procedures
d. HSE procedure and plan
e. Key list and site access contacts
f. Components data sheets
g. Installation and O&M manuals from component manufacturers
h. Studies and tests (tests, geological / geotechnical analysis, static calculation wherever applicable)
i. Mechanical completion documents including but not limited to:
    a. Data sheets and manuals of all components and equipment
    b. Calibration protocols
j. Warranties of component suppliers
    a. IFR
    b. Valves
    c. Galvanization
    d. Painting
k. Commissioning protocols

The CONTRACTOR shall deliver to the CPSTL the final documentation, both in digital and hard copies (2x). All deliverables shall be organized and handed over in Two Printed hard copies and soft copies in a Solid State Drive (SSD) Hard Disk with Enclosure (USB) accordance with the contract requirements in English language as directed by the Engineer. Drawings shall be submitted in ACAD (dwg) format.

SECTION -07

FORM OF BID

FORM OF BID

Name of Contract**:** **Procurement, construction and commissioning of 2 Nos. 15,000 m^3 and 1 No. 10,000 m^3 Storage Tanks at Muthurajawela Terminal.**

To: **Ceylon Petroleum Storage Terminals Limited,**
Oil Installation,
Kolonnawa, Wellampitiya.

Gentlemen:

1. Having examined the Standard Procurement Document - Procurement of Works – Major Contracts [ICTAD/SBD/02 - Second Edition, January 2007], Specifications, Drawings and Bills of Quantities and Addenda for the execution of the above-named Works, we the undersigned, offer to execute and complete such Works and remedy any defect therein in conformity with the aforesaid Conditions of Contract, Specifications, Drawings, Bills of

   Quantities and addenda Nos.……..……for the sum of Sri Lankan Rupees

   ……...……..……

   ……

   (LKR.....……) and

   United States Dollar……

   ……

   (USD .....) or such other sums as may be ascertained in accordance with the said Conditions.
2. We acknowledge that the Contract Data forms part of our Bid.
3. We undertake, if our Bid is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Engineer's notice to commence, and to complete the whole of the Works comprised in the Contract within the time stated in the Contract Data.
4. We agree to abide by this Bid until the date specified in ITB Clause 16, ……..… [*insert Date*] and it shall remain binding upon us and may be accepted at any time before that date.
5. Unless and until a formal Agreement is prepared and executed this Bid, together with your written acceptance thereof, shall constitute a binding Contract between us.
6. We understand that you are not bound to accept the lowest or any bid you may receive.

7. We certify/confirm that we comply with the requirements as per ITB Clause 3and 4 of the Procurement documents.

Dated this …… day of……..……20……..

Signature ……... in the capacity of ……..…...……...……...

duly authorized to sign bids for and on behalf of ..……..…..……

……..…..……..……..…..……..…..……..…..……..…..…… *[in block capitals or typed]*

Name : .....

Designation: ….....

Address: ……..……..…….

Witness: ……...……..

SECTION- 8

BILL OF QUANTITIES

PREAMBLE TO THE BILL OF QUANTITIES

It is the Bidder's responsibility to see that the prices include for complying with all the requirements of the other documents whether specifically referred to in Bill of Quantities.

The Bidder is advised to visit the site of the proposed work and it is the responsibility of the Bidder to ascertain the conditions governing access to the site, the extent of working space storage area etc.

1. This Bill of Quantities contains pages numbered from 85 to 95. Bidders are requested to see that no page is missing, no duplicate and that all TRADES are carried to SUMMARY at the end of the Bill of Quantities.

2. The Conditions of Contract, the Specifications and the Drawings are to be read in conjunction with the Bill of Quantities.

3. The cost of complying with all conditions, obligations and liabilities described in the Conditions of Contract, Specifications and the Bill of Quantities including all overhead charges and profit in carrying out the work as shown on the Drawings shall be deemed to be spread over and included in the prices of sums stated by the Bidder in the Bill of Quantities unless separately measured.

4. If the Bidder fails to price any items in the Bill of Quantities then the cost of the work under such items shall be held to be spread over and included in the prices given against other items of work.

5. The quantities set out in the Bill of Quantities are provisional and cover the approximate scope of the work anticipated to be performed by the Contractor. The actual quantities used for final measurement purposes will be determined by the Engineer by measurement of the work completed by the Contractor.

6. Where trade names, brands and or Catalogue Numbers are referred to, sole preference to any material or equipment is not intended. Any other material or equipment may be used, provided that the characteristics of type, quality, appearance, finish, method of construction and / or performance is superior to the specified.

7. Whenever the method of measurement is not clear from the documents available, the principles as given in the Sri Lanka Standard 573: 1999 UDC 69(08374) shall be applicable.

8. Selected Bidder shall comply with the arrangement of work and be ready to work part by part as required by the Authorities of the Employer if applicable.

9. The unit and lump sum prices of the Bill of Quantities (referred to as the Contract Rates) shall, except in so far as is otherwise provided for under the Contract, be deemed to cover all obligations set out in the Contract, and all matters or things necessary for the proper completion and maintenance of the Works, and shall be fixed and binding upon the Contractor.

10. Unit prices when applied to the quantity of work performed under the Contract shall, and other sums specifically determined under the provisions of the Contract, constitute full remuneration to the Contractor under the Contract.

11. Each item shall be priced by the Bidder in Sri Lanka Rupees or Foreign Currency.
12. Rates for items in this Bill of Quantities shall be inclusive for hauling, transporting, loading, unloading, spreading, heaping, supporting, scaffolding, welding, and for laps, unless otherwise specifically stated.
13. Unless otherwise specifically stated in Bill of Quantities or herein, the following shall be deemed to be included with all items:-
    i. Labour and all costs in connection therewith.
    ii. Materials, goods and all costs in connection therewith.
    iii. Tools, plants, equipment, machinery and all costs in connection therewith.
    iv. Waste of materials.
    v. Protecting and clearing.
    vi. Square cutting.
    vii. Establishment charges, overhead charges and profit.
    viii. All setting out works.
    ix. For providing of method statements, calculations, proposals by Contractor, shop drawings and as built drawings.
    x. The rate for each item shall also include for all the following.
        a. Complying with regulations of the Municipal Council and/or any other relevant authority under which particular item of work is to be executed unless otherwise included in the preliminaries.
        b. Plant and equipment unless and otherwise included in preliminaries.
        c. In addition to above, the rate for item of work in substructure shall include for the works at depth extending below ground water table where applicable including excavation under water, removal and disposal of mud, stand and preparation of place to a condition suitable for proper execution of the work.

14. If Bidders are anticipating to give any discount, it shall be marked separately in the space allocated in the summary of Bill of Quantities. Provisional Sums shall not be considered when calculating discount.

15. All materials, equipment supplied shall be new, unused without any defects.

16. All materials used in the Works shall be of the best quality of their respective kinds as specified and shall be obtained from sources and suppliers approved by the Engineer and shall comply strictly with the tests prescribed or, Where tests are not laid down in this Specification, with the requirements of the latest issue of the relevant British Standards or other Standards approved by the Engineer.

17. Metric units are used throughout the Bill of Quantities for measurement purposes unless otherwise indicated. Abbreviations used in the Contract are as follows:-

L.S.	-	Lump Sum
P.S.	-	Provisional Sum
m	-	Metre
m^2	-	Square metre
m^3	-	Cubic metre
kg	-	kilograms
nr	-	Numbers
LKR	-	Sri Lankan Rupees
USD	-	US Dollars

BILL OF QUANTITIES

CEYLON PETROLEUM STORAGE TERMINALS LIMITED

JOB: PROCUREMENT, CONSTRUCTION AND COMMISSIONING OF 2 NOS. 15,000 m3 AND 1 NO. 10,000 m3 STORAGE TANKS AT MUTHURAJAWELA TERMINAL.

BOQ No: E/…/…….

Note: Items which has both the LKR Component and a Foreign Currency Component, shall be rated separately in the provided columns. For the items which has only a single currency component shall be rated in respective columns. Sub totals of LKR Component and a Foreign Currency Component (Specify the Foreign currency in the space given in BOQ & Summary) should be carried forward to the summary and the Foreign Currency subtotal to be converted in to LKR in the summary (Foreign Currency shall be converted to LKR using "Indicative Exchange Rate" published by the Central Bank of Sri Lanka, on the date 28 Days prior to date of closing of Bids). Then both components shall be added and the total to be carried to Form of Bid.

NO	DESCRIPTION	UNIT	QTY	RATE		AMOUNT	
				USD	LKR	USD	LKR
A	**PRELIMINARIES**						
	PRELIMINARIES FOR TANK "A" & "B"						
	Contractor shall remove all existing temporary structures and hand over all usable materials to the Engineer before construct his own temporary facilities, structures etc.						
A1	Allow lump sum for cleaning site before starting construction works, including removal of existing structures, temporary buildings, all rubbish, debris etc.	Item	Allow				
A2	Removing and stacking temporary facilities, concrete blocks, steel sheets, steel sections, reinforcement steel, casings, machineries, equipment and other remaining goods at site before starting construction works.	Item	Allow				
A3	Cut & removing trees (coconut tree & other trees) & remove the roots from the site before starting construction work.	Item	Allow				

A4	Allow lump sum for mobilization and demobilization for **civil works**.	Item	Allow				
A5	Allow lump sum for mobilization and demobilization for **mechanical works**.	Item	Allow				
A6	Allow lump sum for erection of temporary fire barriers for **construction** work in order to protect the pips and tanks as per fire & safety instruction.	m2	2600				
A7	Supply, erection, maintenance and subsequent removal of all required scaffoldings with relevant attachments, safety precautions, nets etc. for permanent works (internal & external)	Item	Allow				
A8	Allow lump sum for cleaning site on going construction work and completion of works including removal of all rubbish and debris and leaving the site, clean internally and externally.	Item	Allow				
	PRELIMINARIES FOR TANK "C"						
	Contractor shall remove all existing temporary structures and hand over all usable materials to the Engineer before construct his own temporary facilities, structures etc.						
A9	Allow lump sum for mobilization and demobilization for **civil works**.	Item	Allow				
A10	Allow lump sum for mobilization and demobilization for **mechanical works**.	Item	Allow				

A11	Allow lump sum for erection of temporary fire barriers and fire blankets as required for a petroleum terminal to protect surrounding piping, other tanks in order to protect the surrounding piping and tanks in service.	m^2	4840				
A12	Supply, erection, maintenance and subsequent removal of all required scaffoldings with relevant attachments, safety precautions, nets etc. for permanent works.	Item	Allow				
A13	Allow lump sum for cleaning site on completion of works, including removal of all rubbish and debris and leaving the site, clean internally and externally.	Item	Allow				
	SUB TOTAL CARRIED TO SUMMARY						
B	**CONSTRUCTION OF TANK "A"**						
	Construction of Tank Foundation						
	Earth Works						
B1	Excavation for raft foundation material other than topsoil, rock or artificial hard material, to a maximum depth of 1.5. Rate shall include for dewatering (if required), preparation of bottom of excavation and disposal of excavated material within CPSTL premises.	m^3	805				
B2	River sand filling to top of raft foundation, compact with 100mm layers, fill up to 500mm depth.	m^3	670				
B3	100mm thick layer of sand tar mixture (river sand and 80 - 100 hot bitumen mixture) over compacted sand filling.	m^2	1,080				

	Piling Work						
B4	Bored cast-in-situ reinforced concrete piles (87 nr) , with Grade C30 concrete, 750mm dia, depth bored to maximum depth of 24m including pile boring, pile socketing, casing, reinforcement and all other related works and preclusions.	m	2,088				
B5	Backfilling empty bores with stated material and compacted in stages where required.	Item	Allow				
B6	Preparing heads for piles to receive the raft foundation on top.	nr	87				
	Concrete						
B7	100mm thick Screed concrete under raft foundation with Grade C15 concrete.	m^3	115				
B8	Concreting for raft foundation with Grade C30 concrete.	m^3	700				
B9	Concreting for 450mm thick Ring Beam on raft foundation with Grade C30 concrete.	m^3	33				
B10	Construction of tank apron with Grade C25 concrete including forming joints.	m^3	4				
	Formwork						
B11	Curved formwork for sides of raft foundation	m^2	145				

B12	Curved formwork for sides of Ring Beam	m^2	70				
	Reinforcement						
B13	Reinforcement for raft foundation, high yield steel horizontal bars.	kg	144,000				
B14	Reinforcement for Ring Beam high yield steel horizontal and vertical bars.	kg	7,200				
B15	Reinforcement for apron slab, high yield steel horizontal bars.	kg	200				
	Mechanical Works						
B16	Supply and installation of Cathodic protection system with all accessories, connections, supplies etc.	Item	Allow				
	Construction of Steel Tank						
	Supply of Materials	Note					
B17	Supply of all necessary carbon steel plates and other required materials for tank bottom, annular plates, shell plates, compression ring, roof plates, reinforcing plates, nozzle neck plates, covers, nut & bolts, manholes, supports, sump, vents, hatches, accessories, attachments etc.	Item	Allow				
B18	Supply of all necessary structural steel members and tank roof structure, supports, top angle, wind girder, settlement angles, compression ring, hand rails, spiral stairway, pipe pedestals, flatforms, stairs, nut & bolts, Hot dip galvanized steel pipes to guide instrument cables etc..	Item	Allow				

B19	Supply of all necessary carbon steel line pipes, bends, reducers, blinds, nozzles, flanges, manifolds, stiffening rings, gaskets, sprinklers, nuts & bolts, accessories and other required materials for cargo pipe segments, delivery pipe segments, fire water lines, water drencher system, water spry system, foam top pourer system etc.	Item	Allow				
B20	Supply of all painting materials for painting of tank bottom, shell, roof, roof structure, manholes, supports, line pipes, accessories, all attachments, pipes, hand rails, and spiral stairway etc.	Item	Allow				
B21	Supply of all gate valves, DBB valves, expansion joints, flexible bellows etc.	Item	Allow				
B22	Supply of all materials for centre Circulation Vents and flame arresters,	Item	Allow				
	Fabrication, erection, painting and installation						
	Rate shall include for carrying out all required testing's, supply of materials other than considered under separate supply items of this BOQ, consumables, machinery, labour, utilities, temporary arrangements, safety measures/ precautions, hoisting, workshop charges, placing and all other costs attributable to the work.	Note					
B23	Fabricating, laying, forming and welding of bottom plates and annular plates.	Item	Allow				
B24	Fabricating, rolling, erection and welding of shell plates, compression ring, settlement angles and wind girder.	Item	Allow				
B25	Construction of roof structure, roof supports and top angle.	Item	Allow				
B26	Fabrication and installation of roof plates and roof penetrations.	Item	Allow				

B27	Fabrication, formation, preparation and welding of draw off sump (48” dia.), draw off nozzles (4" dia.) and related piping.	Item	Allow				
B28	Fabrication, preparation, installation and welding of 2 nos. shell manholes (30” dia.) with reinforcement plate including necessary machinery work.	Item	Allow				
B29	Fabrication, preparation, installation and welding of 16" dia. inlet and outlet nozzles with reinforcement plates, Intrenl piping arrangement with bottom supports.	Item	Allow				
B30	Fabrication, preparation, installation and welding of 12" dia. Circulation Pipe nozzles with reinforcement plates, Intrenl piping arrangement with bottom supports.	Item	Allow				
B31	Fabrication, preparation, installation and welding of 16" dia. Standby/spare outlet with reinforcement plates.	Item	Allow				
B32	Fabrication, preparation, installation and welding of roof manholes (24” dia.) with reinforcement plates.	Item	Allow				
B33	Fabrication, preparation, installation and welding of roof centre Circulation Vent and Installation of roof center flame arrester.	Item	Allow				
B34	Fabrication, preparation, installation and welding of water spry system, foam top pourer system including piping, nozzles, valves, accessories etc.	Item	Allow				
B35	Fabrication and installation of water drencher system for roof and shell including piping, nozzles, valves, accessories etc.	Item	Allow				

B36	Supplying, fabrication, installation and welding of earthing system including necessary machinery work, connections, cabling, connections, conductor and base plate etc.	Item	Allow				
B37	Fabrication, installation and welding of 6" dia Dip hatch.	Item	Allow				
B38	Fabrication, installation and welding of roof, crown, spiral stairway & other hand rails as required with standard accessories.	Item	Allow				
B39	Fabrication, installation and welding of spiral stairway consisting of 2 stringers, intermediate landings, supporting arrangements and all other standard accessories. Rate shall include for hot dipped galvanized gratings etc.	Item	Allow				
B40	Provisions for installation of continues level measurements and RTDS multipoint temperature measurements.	Item	Allow				
B41	Supply and installation of a leak detection system under the tank including required drain outs.	Item	Allow				
B42	Supply, fabrication and installation of name plate.	Item	Allow				
B43	Carrying out tank hydro test as required and as per API 650.	Item	Allow				
	Painting						
B44	Grit/ Sand blast cleaning and painting of underside of bottom plates.	Item	Allow				
B45	Grit/ Sand blast cleaning and painting of roof structure, top angle, underside of roof plates, 1m below the top angle in the top most shell course.	Item	Allow				

B46	Grit/ Sand blast cleaning and painting of entire bottom of the tank interior and up to 1.5 meter height from the bottom in the bottom most shell course.	Item	Allow				
B47	Grit/ Sand blast cleaning and painting of the shell exterior surface and roof external surfaces with all attachments.	Item	Allow				
B48	Grit/ Sand blast cleaning and painting of stairway and its supportive structure, hand rail and roof, crown & other hand rails as required with all attachments.	Item	Allow				
B49	Grit/ Sand blast cleaning and galvanizing of the water drencher piping system including finish painting.	Item	Allow				
B50	Grit/ Sand blast cleaning product piping and fire water ring piping and foam piping system including painting.	Item	Allow				
B51	Grit/ Sand blast cleaning and Painting of the draw off piping system.	Item	Allow				
B52	Installation of 16" dia. DBB Valve	Item	Allow				
B53	Installation of 16" and 12" dia. Gate Valves and flexible bellows.	Item	Allow				
B54	Installation of 6" dia. 4" dia. and 3" dia. Gate Valves.	Item	Allow				
B55	Inspection of tank Plumbnes & Roundness, Calibration of the tank including supply of 3 calibration tables.	Item	Allow				
	SUB TOTAL CARRIED TO SUMMARY						

C	**CONSTRUCTION OF TANK "B"**						
	Construction of Tank Foundation						
	Earth Works						
C1	Excavation for raft foundation material other than topsoil, rock or artificial hard material, to a maximum depth of 1.5. Rate shall include for dewatering (if required), preparation of bottom of excavation and disposal of excavated material within CPSTL premises.	m^3	805				
C2	River sand filling to top of raft foundation, compact with 100mm layers, fill up to 500mm depth.	m^3	670				
C3	100mm thick layer of sand tar mixture (river sand and 80 - 100 hot bitumen mixture) over compacted sand filling.	m^2	1,080				
	Piling Work						
C4	Bored cast-in-situ reinforced concrete piles (87 nr) , with Grade C30 concrete, 750mm dia, depth bored to maximum depth of 24m including pile boring, pile socketing, casing, reinforcement and all other related works and preclusions.	m	2,088				
C5	Backfilling empty bores with stated material and compacted in stages where required.	Item	Allow				
C6	Preparing heads for piles to receive the raft foundation on top.	nr	87				

	Concrete						
C7	100mm thick Screed concrete under raft foundation with Grade C15 concrete.	m^3	115				
C8	Concreting for raft foundation with Grade C30 concrete.	m^3	700				
C9	Concreting for 450mm thick Ring Beam on raft foundation with Grade C30 concrete.	m^3	33				
C10	Construction of tank apron with Grade C25 concrete including forming joints.	m^3	4				
	Formwork						
C11	Curved formwork for sides of raft foundation	m^2	145				
C12	Curved formwork for sides of Ring Beam	m^2	70				
	Reinforcement						
C13	Reinforcement for raft foundation, high yield steel horizontal bars.	kg	144,000				
C14	Reinforcement for Ring Beam high yield steel horizontal and vertical bars.	kg	7,200				
C15	Reinforcement for apron slab, high yield steel horizontal bars.	kg	200				
	Mechanical Works						
C16	Supply and installation of Cathodic protection system with all accessories, connections, supplies etc.	Item	Allow				
	Construction of Steel Tank						

	Supply of Materials						
	Rate shall include for shipping, transport up to site, leavys, taxes, custom duties and other charges, warehouse charges, loading, unloading and all other costs attributable to supply of materials to the site.	Note					
C17	Supply of all necessary carbon steel plates and other required materials for tank bottom, annular plates, shell plates, compression ring, roof plates, reinforcing plates, nozzle neck plates, covers, nut & bolts, manholes, supports, sump, vents, hatches, accessories, attachments etc.	Item	Allow				
C18	Supply of all necessary structural steel members and tank roof structure, supports, top angle, wind girder, settlement angles, compression ring, hand rails, spiral stairway, pipe pedestals, flatforms, stairs, nut & bolts, Hot dip galvanized steel pipes to guide intrument cables etc.	Item	Allow				
C19	Supply of all necessary carbon steel line pipes, bends, reducers, blinds, nozzles, flanges, manifolds, stiffening rings, gaskets, sprinklers, nuts & bolts, accessories and other required materials for cargo pipe segments, delivery pipe segments, fire water lines, water drencher system, water spry system, foam top pourer system etc.	Item	Allow				
C20	Supply of all painting materials for painting of tank bottom, shell, roof, roof structure, manholes, supports, line pipes, accessories, all attachments, pipes, hand rails, and spiral stairway etc.	Item	Allow				
C21	Supply of all gate valves, DBB valves, expansion joints, flexible bellows etc.	Item	Allow				
C22	Supply of all materials for center Circulation Vents and flame arresters,	Item	Allow				
	Fabrication, erection, painting and installation						

	Rate shall include for carrying out all required testing's, supply of materials other than considered under separate supply items of this BOQ, consumables, machinery, labour, utilities, temporary arrangements, safety measures/ precautions, hoisting, workshop charges, placing and all other costs attributable to the work.	Note					
C23	Fabricating, laying, forming and welding of bottom plates and annular plates.	Item	Allow				
C24	Fabricating, rolling, erection and welding of shell plates, compression ring, settlement angles and wind girder.	Item	Allow				
C25	Construction of roof structure, roof supports and top angle.	Item	Allow				
C26	Fabrication and installation of roof plates and roof penetrations.	Item	Allow				
C27	Fabrication, formation, preparation and welding of draw off sump (48” dia.), draw off nozzles (4" dia.) and related piping.	Item	Allow				
C28	Fabrication, preparation, installation and welding of 2 nos. shell manholes (30” dia.) with reinforcement plate including necessary machinery work.	Item	Allow				
C29	Fabrication, preparation, installation and welding of 16" dia. inlet and outlet nozzles with reinforcement plates, Intrenl piping arrangement with bottom supports.	Item	Allow				
C30	Fabrication, preparation, installation and welding of 12" dia. Circulation Pipe nozzles with reinforcement plates, Intrenl piping arrangement with bottom supports.	Item	Allow				
C31	Fabrication, preparation, installation and welding of 16" dia. Standby/spare outlet with reinforcement plates.	Item	Allow				

C32	Fabrication, preparation, installation and welding of roof manholes (24" dia.) with reinforcement plates.	Item	Allow				
C33	Fabrication, preparation, installation and welding of roof centre Circulation Vent and Installation of roof center flame arrester.	Item	Allow				
C34	Fabrication, preparation, installation and welding of foam top pourer system including piping, nozzles, valves, accessories etc.	Item	Allow				
C35	Fabrication and installation of water drencher system & water spry system for roof and shell including piping, nozzles, valves, accessories etc.	Item	Allow				
C36	Supplying, fabrication, installation and welding of earthing system including necessary machinery work, connections, cabling, connections, conductor and base plate etc.	Item	Allow				
C37	Fabrication, installation and welding of 6" dia Dip hatch.	Item	Allow				
C38	Fabrication, installation and welding of roof, crown, spiral stairway & other hand rails as required with standard accessories.	Item	Allow				
C39	Fabrication, installation and welding of spiral stairway consisting of 2 stringers, intermediate landings, supporting arrangements and all other standard accessories. Rate shall include for hot dipped galvanized gratings etc.	Item	Allow				
C40	Provisions for installation of continues level measurements and RTDS multipoint temperature measurements.	Item	Allow				
C41	Supply and installation of a leak detection system under the tank including required drain outs.	Item	Allow				

C42	Supply, fabrication and installation of name plate.	Item	Allow				
C43	Carrying out tank hydro test as required and as per API 650.	Item	Allow				
	Painting						
C44	Grit/ Sand blast cleaning and painting of underside of bottom plates.	Item	Allow				
C45	Grit/ Sand blast cleaning and painting of roof structure, top angle, underside of roof plates, 1m below the top angle in the top most shell course.	Item	Allow				
C46	Grit/ Sand blast cleaning and painting of entire bottom of the tank interior and up to 1.5 meter height from the bottom in the bottom most shell course.	Item	Allow				
C47	Grit/ Sand blast cleaning and painting of the shell exterior surface and roof external surfaces with all attachments.	Item	Allow				
C48	Grit/ Sand blast cleaning and painting of stairway and its supportive structure, hand rail and roof, crown & other hand rails as required with all attachments.	Item	Allow				
C49	Grit/ Sand blast cleaning and galvanizing of the water drencher piping system including finish painting.	Item	Allow				
C50	Grit/ Sand blast cleaning product piping and fire water ring piping and foam piping system including painting.	Item	Allow				
C51	Grit/ Sand blast cleaning and Painting of the draw off piping system.	Item	Allow				
C52	Installation of 16" dia. DBB Valve	Item	Allow				

C53	Installation of 16" and 12" dia. Gate Valves and flexible bellows.	Item	Allow				
C54	Installation of 6" dia. 4" dia. and 3" dia. Gate Valves.	Item	Allow				
C55	Inspection of tank Plumbnes & Roundness, Calibration of the tank including supply of 3 calibration tables.	Item	Allow				
	SUB TOTAL CARRIED TO SUMMARY						
D	**CONSTRUCTION OF TANK "C"**						
	Construction of Tank Foundation						
	Earth Works						
D1	Excavation for raft foundation material other than topsoil, rock or artificial hard material, to a maximum depth of 1.5. Rate shall include for dewatering (if required), preparation of bottom of excavation and disposal of excavated material within CPSTL premises.	m^3	695				
D2	River sand filling to top of raft foundation, compact with 100mm layers, fill up to 300 - 400mm average depth.	m^3	485				
D3	100mm thick layer of sand tar mixture (river sand and 80 - 100 hot bitumen mixture) over compacted sand filling.	m^2	810				
	Piling Work						
D4	Bored cast-in-situ reinforced concrete piles (61 nr) , with Grade C30 concrete, 750mm dia, depth bored to maximum depth of 24m including pile boring, pile socketing, casing, reinforcement and all other related works and preclusions.	m	1,464				

D5	Backfilling empty bores with stated material and compacted in stages where required.	Item	Allow				
D6	Preparing heads for piles to receive the raft foundation on top.	nr	61				
	Concrete						
D7	100mm thick Screed concrete under raft foundation with Grade C15 concrete.	m^3	90				
D8	Concreting for raft foundation with Grade C30 concrete.	m^3	515				
D9	Concreting for 450mm thick Ring Beam on raft foundation with Grade C30 concrete.	m^3	28				
D10	Construction of tank apron with Grade C25 concrete including forming joints.	m^3	3				
	Formwork						
D11	Curved formwork for sides of raft foundation	m^2	145				
D12	Curved formwork for sides of Ring Beam	m^2	65				
	Reinforcement						
D13	Reinforcement for raft foundation, high yield steel horizontal bars.	kg	122,200				
D14	Reinforcement for Ring Beam high yield steel horizontal and vertical bars.	kg	6,600				
D15	Reinforcement for apron slab, high yield steel horizontal bars.	kg	180				
	Mechanical Works						
D16	Supply and installation of Cathodic protection system with all accessories, connections, supplies etc.	Item	Allow				

	Construction of Steel Tank						
	Supply of Materials						
	Rate shall include for shipping, transport up to site, leavys, taxes, custom duties and other charges, warehouse charges, loading, unloading and all other costs attributable to supply of materials to the site.	Note					
D17	Supply of all necessary carbon steel plates and other required materials for tank bottom, annular plates, shell plates, compression ring, roof plates, reinforcing plates, nozzle neck plates, covers, nut & bolts, manholes, supports, sump, vents, hatches, accessories, attachments etc.	Item	Allow				
D18	Supply of all necessary structural steel members and tank roof structure, supports, top angle, wind girder, settlement angles, compression ring, hand rails, spiral stairway, pipe pedestals, flatforms, stairs, nut & bolts, Hot dip galvanized steel pipes to guide intrument cables etc.	Item	Allow				
D19	Supply of all necessary carbon steel line pipes, bends, reducers, blinds, nozzles, flanges, manifolds, stiffening rings, gaskets, sprinklers, nuts & bolts, accessories and other required materials for cargo pipe segments, delivery pipe segments, fire water lines, water drencher system, water spry system, foam top pourer system etc.	Item	Allow				
D20	Supply of all painting materials for painting of tank bottom, shell, roof, roof structure, manholes, supports, line pipes, accessories, all attachments, pipes, hand rails, and spiral stairway etc.	Item	Allow				
D21	Supply of Internal floating roof as per specification	Item	Allow				

D22	Supply of all gate valves, DBB valves, butterfly valves, expansion joints, flexible bellows etc.	Item	Allow				
D23	Supply of all materials for 4" (SCH 40) stilling well for Temperature Measurement, 6"(SCH 40) for dipping, 8" (SCH 40)for radar gauge.	Item	Allow				
D24	Supply of all materials for roof center air vent and roof vents near roof perimeter.	Item	Allow				
	Fabrication, erection, painting and installation						
	Rate shall include for carrying out all required testing's, supply of materials other than considered under separate supply items of this BOQ, consumables, machinery, labour, utilities, temporary arrangements, safety measures/ precautions, hoisting, workshop charges, placing and all other costs attributable to the work.	Note					
D25	Fabricating, laying, forming and welding of bottom plates and annular plates.	Item	Allow				
D26	Fabricating, rolling, erection and welding of shell plates, compression ring, settlement angles and wind girder.	Item	Allow				
D27	Construction of roof structure, roof supports and top angle.	Item	Allow				
D28	Fabrication and installation of roof plates including tank perephery vents, center vent etc.	Item	Allow				
D29	Fabrication, formation, preparation and welding of 2 nos. draw off sumps (48" dia.), draw off nozzles (4" dia.) and related piping.	Item	Allow				
D30	Fabrication, preparation, installation and welding of 2 nos. shell manholes (30" dia.) with reinforcement plate including necessary machinery work.	Item	Allow				

D31	Fabrication, preparation, installation and welding of 2 nos. IFR access manholes (30” dia.) with reinforcement plate including necessary machinery work above the IFR operational height.	Item	Allow				
D32	Fabrication, preparation, installation and welding of 16" dia. inlet and outlet nozzles with reinforcement plates, Intrenl piping arrangement with bottom supports.	Item	Allow				
D33	Fabrication, preparation, installation and welding of 12" dia. Circulation Pipe nozzles with reinforcement plates, Intrenl piping arrangement with bottom supports.	Item	Allow				
D34	Fabrication, preparation, installation and welding of 16" dia. Standby outlet with reinforcement plates.	Item	Allow				
D35	Installation of flow diffusers for Inlet and Circulation pipes inside the tank	Item	Allow				
D36	Fabrication, preparation, installation and welding of roof manholes (24” dia.) with reinforcement plates.	Item	Allow				
D37	Fabrication, preparation, installation and welding of roof center air vent.	Item	Allow				
D38	Fabrication, preparation, installation and welding of roof vents near roof perimeter	Item	Allow				
D39	Fabrication, preparation, installation and welding of foam top pourer system including piping, nozzles, valves, manifolds, accessories etc.	Item	Allow				
D40	Fabrication and installation of water drencher system & water spry system for roof and shell including piping, nozzles, valves, accessories etc.	Item	Allow				

D41	Supplying, fabrication, installation and welding of earthing system including necessary machinery work, connections, cabling, connections, conductor and base plate etc.	Item	Allow				
D42	Supplying, fabrication, installation and welding of 8" dia. vertical pipe for radar gauge.	Item	Allow				
D43	Fabrication, installation and welding of 6" dia Dip hatch.	Item	Allow				
D44	Fabrication, installation and welding of roof, crown & other hand rails as required with standard accessories.	Item	Allow				
D45	Fabrication, installation and welding of spiral stairway consisting of 2 stringers, intermediate landings, supporting arrangements and all other standard accessories. Rate shall include for hot dipped galvanized gratings etc.	Item	Allow				
D46	Fabrication & installation of flow diffusers.	Item	Allow				
D47	Provisions for installation of continues level measurements and RTDS multipoint temperature measurements.	Item	Allow				
D48	Supply and installation of a leak detection system under the tank including required drain outs.	Item	Allow				
D49	Supply and installation of a fire detection system in the tank including required instrumentation/electrical cables and alarming system	Item	Allow				
D50	Installing, testing and commissioning of Internal Floating Roof (IFR), including ladders, vent system and fire detection system etc.	Item	Allow				

D51	Supply, fabrication and installation of name plate.	Item	Allow				
D52	Carrying out tank hydro test as required and as per API 650.	Item	Allow				
	Painting						
D53	Grit/ Sand blast cleaning and painting of underside of bottom plates.	Item	Allow				
D54	Grit/ Sand blast cleaning and painting of roof structure, top angle, underside of roof plates, 1m below the top angle in the top most shell course.	Item	Allow				
D55	Grit/ Sand blast cleaning and painting of entire bottom of the tank interior and up to 1.5 meter height from the bottom in the bottom most shell course with stril well and all supporting post .	Item	Allow				
D56	Grit/ Sand blast cleaning and painting of the shell exterior surface and roof external surfaces with all attachments.	Item	Allow				
D57	Grit/ Sand blast cleaning and painting of stairway and its supportive structure, hand rail and roof, crown & other hand rails as required with all attachments.	Item	Allow				
D58	Grit/ Sand blast cleaning and galvanizing of the water drencher piping system and foam piping system including finish painting.	Item	Allow				
D59	Grit/ Sand blast cleaning product line and fire water ring line including finish painting.	Item	Allow				
D60	Grit/ Sand blast cleaning and galvanizing of the draw off piping system including finish painting.	Item	Allow				
D61	Installation of 16" dia. DBB Valve	Item	Allow				

D62	Installation of 16" and 12" dia. Gate Valves and flexible bellows.	Item	Allow				
D63	Installation of 6" dia. 4" dia. and 3" dia. Gate Valves.	Item	Allow				
D64	Calibration of the tank including supply of 3 calibration tables.	Item	Allow				
D65	Construction of product piping system including all fittings, platforms, steel stairs, pits etc. and connect to the existing system as directed by the Engineer.	Item	Allow				
	SUB TOTAL CARRIED TO SUMMARY						
E	**CONSTRUCTION OF TANK FARM AND PERIMETER ROAD**						
	Dike Wall, Ramp Wall, Drains and High Pole Lamp						
E1	General trench Excavation for dike wall base & drain base	m^3	2,500				
E2	50mm thick Screed concrete under drain base bund wall base with Grade C15 concrete.	m^3	150				
E3	Dike and drain concrete with Grade C25 concrete. Rate shall include for forming expansion joint and pipe crossing including water proof steel rings etc., as per detail drawing.	m^3	1,070				
E4	Formwork for sides of dike wall and drain wall & base. Rate to be including for all necessary boards, supports, erecting, framing, cutting angles, cleaning wetting, treatment before placing concrete & sealing form ties.	m^2	6,020				
E5	Reinforcement for Dike and drain high yield steel horizontal and vertical bars.	kg	59,350				

E6	Supply, filling and compaction of imported soil for tank ramp as per detail drawing.	m^3	4,400				
E7	Supply, laying & compacting gravel soil as per detail drawing.	m^3	155				
E8	pre casting, transporting, & placing 400mm dia. Pre cast pile for high pole lamp foundation as per drawing.	m	70				
	Perimeter Road, Culvert and Fencing						
E9	Excavation for road construction and culvert construction	m^3	1,800				
E10	pre casting, transporting, & placing 400mm dia. Pre cast pile as per drawing.	m	14				
E11	50mm thick Screed concrete under culvert base with Grade C15 concrete.	m^3	6				
E12	Culvert base, wall and slab concrete with Grade C25 concrete.	m^3	78				
E13	Formwork for sides of culvert base, wall and slab	m^2	216				
E14	Reinforcement for culvert base, wall and slab high yield steel horizontal and vertical bars.	kg	11,320				
E15	100x150 mm Rubble packing for 300 mm thick as per road sectional detail.	m^2	2,800				

E16	150 mm thick back fille with gravel soil as per road sectional detail	m^3	420				
E17	150 x 225mm rubbbel Pitched paving 150 mm thick.	m^2	880				
E18	Supply, levelling & compacting of ABC (Aggregate Base Course up to 98%) as specified for soil improvement as per drawing. Compacted layer thickness shall be as per the approved construction drawing. The Contractor shall submit a shop drawing to obtain the approval of the Engineer after analyze soil conditions at the site. Suitable compacting equipment shall be used to achieve the compaction. (Compaction of ABC mixture shall be complied with relevant SCA/5 specification. Compacted ABC layers shall be tested for compaction prescribed by SCA/5 specification)	m^3	755				
E19	Applying of prime coat with Bitumen emulsion CSS1 at the rate of 1 liter/sq.m, after properly removing of all dust and surface shall be completely dried.	m^2	2,700				
E20	Applying of tack coat with Bitumen emulsion CRS1 at the rate of 0.5 liter/sq.m after properly removing of all dust and surface shall be completely dried.	m^2	2,700				
E21	Supply, lay & compact asphalt 50 mm thick concrete 19mm, binder (60/70) Dense (Plant made)in wearing surface	m^2	2,700				
E22	Supplying & laying 495x100x200 mm precast concrete kerbas per deail drawing.	m	310				
E23	Supply & plasing grade 25 concrete for placing kerb as per detail drawing.	m^3	9				
E24	Supplying & laying of 600mm dia. 2.4m long NP3 type Hume pipe as per detail drawing	m	24				

E25	Supplying & laying of 300mm dia. 2.4m long NP3 type Hume pipe as per detail drawing	m	24				
E26	Supplying & placing pre cast box culvert internal size 1000x3000x2000 mm as per detail drawing.	nr	7				
E27	Supplying, fabricating, welding, laying of gauge 10 PVC coated GI chan link mesh fence with 50mm (2") dia. Heavy duty GI pipe frame as per detail drawing. Rate shall include for excavation, 50mm thick screed concrete, 150x225mm RRM foundation, 75mm thick concrete capping and 2nr.s of gauge 8 PVC coated string wire.	m	300				
E28	Supplying, fabricating, welding and installation of 7000x2100 mm gate as per detail drawing. Rate shall inlude for excavation, concrete work, 50mm (2") dia GI pipe, 150mm (6") dia. heavy duty GI posts, hinges and etc. work.	nr.	2				
	Pipe Pedestal / Pipe Sleepers						
E29	Excavation for pipe pedestal construction. Rate shall include for backfilling with excavated selected soil.	m^3	125				
E30	50mm thick Screed concrete under culvert base with Grade C15 concrete.	m^3	12				
E31	Supply & placing of C 25 concrete for pipe supports/ pedestals	m^3	116				
E32	Supply & fix fair faced timber/ suitable material for formwork for the pipe supports/ pedestals. Rate to be including for all necessary boards, supports, erecting, framing, cutting angles, cleaning wetting, treatment before placing concrete & sealing form ties.	m^2	600				

E33	Reinforcement for pipe sleepers base and wall high yield steel horizontal and vertical bars.	kg	7,175				
E34	pre casting, transporting, & placing 400mm dia. Pre cast pile as per drawing.	m	2,160				
E35	Preparing heads for piles to receive the raft foundation on top.	nr	94				
E36	Supply & fixing 8mm thick Mild steel embedded plate for product as per detail drawings. Rate shall include for fabricating, welding of pipe support and Saddle to pipes etc.	nr	47				
E37	Supply & fixing 8mm thick Mild steel embedded plate for Fire Water pipe line as per detail drawings. Rate shall include for fabricating, welding of pipe support and Saddle to pipes etc.	nr	100				
	Valve Chambers, Oilywater Collection points and Manholes/ Interceptor						
E38	Excavation for valve chambers and manholes	m^3	8				
E39	50mm thick Screed concrete under valve chambers base with Grade C15 concrete.	m^3	1				
E40	Valve chambers base, wall and slab concrete with Grade C25 concrete.	m^3	3				
E41	Supply & fix fair faced timber/ suitable material for formwork for the valve chamber base & wall. Rate to be including for all necessary boards, supports, erecting, framing, cutting angles, cleaning wetting, treatment before placing concrete & sealing form ties.	m^2	34				

E42	Reinforcement for valve chambers base, wall and slab high yield steel horizontal and vertical bars.	kg	2,340				
E43	Supplying, fabricating & fixing 6mm thick removable GI plate cover for valve pits. Ratae shall include for forming 75x75x5 mm angle iron frame as per detail drawing.	nr	3				
E44	Supplying & fixing 600x600 mm DI manhole cover with frame	nr.	9				
	Cable Trench						
E45	Excavation for cable trench	m^3	357				
E46	Cable trench base & wall concrete with Grade C25 concrete.	m^3	141				
E47	Supply & fix fair faced timber/ suitable material for formwork for the cable trench base & wall. Rate to be including for all necessary boards, supports, erecting, framing, cutting angles, cleaning wetting, treatment before placing concrete & sealing form ties.	m^2	886				
E48	Reinforcement for trench high yield steel horizontal and vertical bars.	kg	4,255				
E49	River sand filling to top of cable trench as per drawing.	m^3	108				
E50	Supply & laying of Engineering bricks top of trench as per drawing.	m2	238				
E51	Back filling and compaction of excavated soil (minimum thick 300 mm) in the cable trench as per detail drawing.	m^3	119				

E52	Supply & laying of concrete sign plate along cable trench for every 10m intervals	nr.	75				
	SUB TOTAL CARRIED TO SUMMARY						
F	**PRODUCT, OILY WATER & FIRE WATER PIPING WORKS, ELECTRICAL & INSTRUMENT WORK**						
	<u>Material Supply</u>						
F1	Supply of all necessary carbon steel line pipes, bends, reducers, blinds, Oscilating ground fire water monitors, fire water wet barrel hydrants, flanges, foam manifolds, gaskets, nuts & bolts, accessories and other required materials for cargo pipe segments, delivery pipe segments, fire water lines etc.	Item	Allow				
F2	Supply of tank gauging units for Radar Level Transmitter, Pressure Transmitter, Temperature Transmitter, CIU, Level Switches, Explosion Proof Junction Boxes, GI Conduits, Mounting Poles, Surge protectors & Power supply System, accessories, electrical & control cables etc.	Item	Allow				
F3	Supply of fire alarm system including Gas detectors, Alarming Panel, Break Glass Units, Field Emergency Telephones, Explosion Proof Junction Boxes, Control Cables, installation accessories and Integration with existing system	Item	Allow				
F4	Supply of fire fitting system with Fire MOVs, , all gate valves, butterfly valves, Isolation Valves, Power Panel, Explosion Proof Junction Boxes, fire water hose cabinet, Control & power Cables, installation accessories and Integration with existing systems.	Item	Allow				
F5	Supply of High pole Lighting Towers, lightening protectors, Three phase & single phase Industrial & welding socket outlets and electrical cables including accessories.	Item	Allow				

F6	Supply of all gate valves, PSV and DBB valves for etc. for product pipe lines. (for Main product pipelines and their Vents drains)	Item	Allow				
	Installation						
F7	Fabrication and installation of 18" cargo pipe line from tank inlet to existing line with , pipeline vents and drains	m	460				
F8	Fabrication and installation of 16" delivery pipe line with pipeline vents and drains	m	920				
F9	Fabrication and installation of 12" circulation pipe line with pipeline vents and drains	m	435				
F10	Fabrication and installation of 18" fire water pipe line with pipeline vents and drains	m	450				
F11	Fabrication, installation, and laying of 10" oily water pipe lines. Rate shall include for excavation of trench and backfilling with excavated soil, connecting to existing pumpstation as per Engineer instruction.	m	170				
F12	Fabrication, installation, and laying of 8" oily water pipe line. Rate shall include for excavation of trench and backfilling with excavated soil as per Engineer instruction.	m	280				
F13	Installation of 18" DBB yard valve with all accessories	nr.	1				
F14	Installation of 16" gate valve with all accessories in outlet pipe line	nr.	1				

F15	Installation of 12" gate valve with all accessories in circulation pipe line	nr.	1				
F16	Installation of 6" dia. 4" dia. and 3" dia. Gate Valves.	Item	1				
F17	Fabrication, preparation, installation and welding of pressure relief system for all product pipelines.	Item	Allow				
F18	Installation of fire fighting system (fire water wet barrel hydrant, oscilating ground fire water monitors, foam manifolds, fire water hose cabinet and water spray system) with fire fighting accessory, valve platforms etc.	Item	1				
F19	Fabrication and installation of platforms for fire monitors & Valves.	nr.	7				
F20	Fabrication and installation of platforms and steps for overpassing dike.	Item	1				
F21	Installation and commissioning of tank gauging units with Radar Level Transmitter, Pressure Transmitter, Temperature Transmitter, CIU, Level Switches, Explosion Proof Junction Boxes, GI Conduits, Mounting Poles, Surge protectors & Power supply System, accessories, electrical & control cables etc.	Item	Allow				
F22	Installation and commissioning of fire alarm system including Gas detectors, Alarming Panel, Break Glass Units, Field Emergency Telephones, Explosion Proof Junction Boxes, Control Cables, installation accessories and Integration with existing system, the existing MIMIC panel at Fire Control Centre etc.	Item	Allow				
F23	Installation of fire fighting system with Fire MOVs, Power Panel, Explosion Proof Junction Boxes, Control & power Cables, installation accessories and Integration with existing system.	Item	Allow				

F24	Installation of High pole Lighting Towers, lightening protectors, Three phase & single phase Industrial & welding socket outlets and electrical cables including accessories.	nr.	2				
F25	laying of instrument cable on new trench. Rate shall include for filling river sand on the trench, covering with Engineering bricks, back filling with excavated soil (300 mm height) and compaction as per specification.	m	185				
F26	laying of instrument cable on existing trench. Rate shall include for excavation, opening existing trench, sand excavation, cable laying, backfilling with excavated sand, covering with removed Engineering bricks, back filling with excavated soil (300 mm height) and compaction as per specification.	m	725				
F27	laying of electrical cable on new trench. Rate shall include for filling river sand on the trench, covering with Engineering bricks, back filling with excavated soil (300 mm height) and compaction as per specification.	m	335				
F28	laying of electrical cable on existing trench. Rate shall include for excavation, opening existing trench, sand excavation, cable laying, backfilling with excavated sand, covering with removed Engineering bricks, back filling with excavated soil (300 mm height) and compaction as per specification.	m	560				
F29	Road crossing for electrical cable. Rate shall include for excavation of existing road, excavation of trench, laying 6" dia. Type 1000 (PN11) uPVC pipes (05 nr.s), sand bedding, back filling and complete road surface.	Item	1				
F30	Road crossing for instrument cable. Rate shall include for excavation of existing road, excavation of trench, laying 6" dia. Type 1000 (PN11) uPVC pipes (05 nr.s), sand bedding, back filling and complete road surface.	Item	1				
	SUB TOTAL CARRIED TO SUMMARY						

ITEM	DESCRIPTION	LKR AMOUNT	FOREIGN CURRENCY AMOUNT (…….)
A	PRELIMINARIES		
B	CONSTRUCTION OF TANK 'A'		
C	CONSTRUCTION OF TANK 'B'		
D	CONSTRUCTION OF TANK 'C'		
E	CONSTRUCTION OF TANK FARM AND PERIMETER ROAD		
F	PRODUCT, OILY WATER & FIRE WATER PIPING WORKS, ELECTRICAL & INSTRUMENT WORK		
Sub Total I			
Less discount if any			
Sub Total II			
SSCL (2.5%) only if applicable			
Total sum carried to form of bid			
VAT (18%) only **if applicable**			
TOTAL AMOUNT WITH VAT			

SECTION – 9

SCHEDULES

SCHEDULES

Schedule 1 – General Information

(i) If pre-qualification is done the bidders are required to include information subsequent to that submitted with the pre-qualification application.

(ii) For joint ventures, each joint venture partner shall furnish information separately.

ITB Clause reference	Description	Information (to be filled by the bidder)	Remarks
	ICTAD Registration		Provide certified copies and label as attachment to clause 3.1
	Registration Number		
	Grade		
	Specialty		
	Expiry Date		
	NCASL Membership		Provide certified copies and label as attachment to clause 3.2
	Number		
	Expiry Date		
	Legal Status		Provide certified copies of Registration
	Written Power of attorney of the signatory to the Bid	Provide original or certified copy of the power of attorney attested by a Notary and label as attachment to clause 4.1(a)	
	If a Joint Venture, names and addresses of Joint Venture Partner	1. …….. 2. …….. 3. ……..	Provide a draft copy of the Joint Venture Agree-ment or alternatively the memorandum of understanding
	If a Joint Venture, Name of Lead Partner		
	For joint ventures, each joint venture partner shall furnish Legal Status separately		
	(Lead Partner)		Provide certified copies and label as attachment to clause 4.1(a)
	Legal Status		
	Place of registration		
	Principal place of business		

	Written Power of attorney of the signatory to the Bid	Provide original or certified copy of the power of attorney attested by a Notary and label as attachment to clause 4.1(a)

Schedule 1– General Information continued …….

	If a Joint Venture, names and addresses of Joint Venture Partner	1. …….. 2. …….. 3. ……..	Provide a draft copy of the Joint Venture Agreement or alternatively the memorandum of understanding
	If a Joint Venture, Name of Lead Partner		
	For joint ventures, each joint venture partner shall furnish Legal Status separately		
	(Partner 2)		Provide certified copies and label as attachment to clause 4.1(a)
	Legal Status		
	Place of registration		
	Principal place of business		
	Written Power of attorney of the signatory to the Bid	Provide original or certified copy of the power of attorney attested by a Notary and label as attachment to clause 4.1(a)	
	VAT Registration Number		
	Name (Partner 3)		Provide certified copies and label as attachment to clause 4.1(a)
	Legal Status		
	Place of registration		
	Principal place of business		
	Written Power of attorney of the signatory to the Bid	Provide original or certified copy of the power of attorney attested by a Notary and label as attachment to clause 4.1(a)	
	VAT Registration Number		

Schedule 2 – Annual Turn-over Information

(i) If pre-qualification is done the bidders are required to include information subsequent to that submitted with the pre-qualification application.

(ii) For joint ventures, each joint venture partner shall furnish information separately.

Year	Turn-over	Remarks
2015 / 2016		Attach audited reports and label as attachment to clause 4.2
2016 / 2017		
2017 / 2018		
2018 / 2019		
2019 / 2020		
Average		

Schedule 3 – Adequacy of Working Capital

If pre-qualification is done the bidders are required to include information subsequent to that submitted with the pre-qualification application.

Source of credit line	Amount	Remarks
		Provide documentary evidence and label as attachment to clause 4.2

Schedule 4 – Construction Experience in last ten years

(i) If pre-qualification is done the bidders are required to include information Subsequent to that submitted with the pre-qualification application.

(ii) For joint ventures, each joint venture partner shall furnish information separately.

Year	Employer	Description of Works	Amount	Contractor's Responsibility (%)

- Provide documentary evidence and label as attachment to Clause 4.2

Schedule 5 – Major Items of Construction Equipment Proposed

Type	Capacity

Schedule 6 – Construction Management Staff (Contract Managers/Technical Staff)			
A. Key Personnel / Professionals			
	Name	**Position**	**Task**
Managerial	1.		
	2.		
	3.		
Technical	1.		
	2.		
	3.		
B. Support Staff			
	Name	**Position**	**Task**
	1.		
	2.		
	3.		
	4.		
	5.		

Schedule 7 - Time Schedule for Key Staff

Name	Position	Activities	Months (in the form of a Bar Chart)																	Number of Months
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	…..	…..	28	

DUPLICATE

Full Time:----------

Full Time:----------

Schedule 8 - Work Program																		
	(1st, 2nd,etc. months from the start date.)																	
Construction Activity	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	…..	…..	28h

SCHEDULE FOR DAY WORKS

SCHEDULE A- LABOUR

Any labour engaged on Day work shall be paid at the rates given below. Contractor's profit and overheads should not be included in the rates.

No.	Category	Gross Daily Wages LKR
1	Skilled labour	
2	Semi-skilled labour	
3	Unskilled labour	
4	Welder	

SCHEDULE B-MATERIAL

The Bidder shall give in this schedule the basic price of the following material

No.	Category	Unit	Gross Rate LKR
1	Carbon Steel Plate	Ton	
2	Sulphur resistant cement	50 kg bag	
3	Sand	m^3	
4	Reinforcement steel	kg	

SCHEDULE C – PLANT

Any Plant engaged on Day works shall be paid at the rates given below. The rates are for wet hire. These rates shall include for all inputs for running of the plant, transport to site, operators, attendants, insurance and other overheads associated with such plant.

No.	Description of Plant	Hourly Rate LKR
1	Farm Tractor with Trailer	
2	Backhoe Loader	
3	Excavator (1 m^3)	
4	Lorry/Tipper (5 t) with driver	
5	DC Welding Plant	
6	25 Ton Crane	
7	50 Ton Crane	
8	Grit/Sand blasting equipment	

Schedule 9–Details of Suppliers & Manufactures					
No	**Item**	**Manufacture**	**Supplier**	**Country of Origin**	**Country of manufacturer**
1.	Plates				
2.	Pipes				
3.	Fittings				
4.	Flanges				
5.	Nut & bolts				
6.	Gaskets				
7.	Valves				
8.	Level gauges				
9.	Dip hatches				
10.	Cathodic protection system				
11.	Internal Floating Roofs				
12.	Top Foam pourers				
13.	Water sprinkle nozzles				
14.	Leak detection system				
15.	Fire detection system				
16.	Any Other				

SECTION – 10

DRAWINGS AND ANNEXURES

LIST OF DRAWINGS

NO.	DRAWING TITLE	DRG. NO.
01	General Layout	1780-1
02	Tank A & B (15,000m^3) General Layout	1780-2
03	Tank C (10,000m^3) General Layout	1780-3
04	P & I Diagrams	1780-4
05	Tank A & B (15,000m^3) Reference Drawing for Roof Structure Detail-1	1780-5
06	Tank A & B (15,000m^3) Reference Drawing for Roof Structure Detail-2	1780-6
07	Tank C (10,000m^3) Reference Drawing for Roof Structure Detail-1	1780-7
08	Tank C (10,000m^3) Reference Drawing for Roof Structure Detail-2	1780-8
09	Product Piping & Fire Fighting Layout	1780-9
10	Reference Drawing for pile arrangement 15,000m^3 Storage Tank	1780-10
11	Reference Drawing for pile arrangement 10,000m^3 Storage Tank	1780-11
12	Reference Drawing for Catch Pit, Valve pit, Manhole detail	1780-12
13	Reference Drawing for Culvert 02 detail (Precast)	1780-13
14	Reference Drawing for Dike wall detail	1780-14
15	Gate and Fence Detail	1780-15
16	Steel Platform	1780-16
17	Foundation Detail for High Pole Lamp	1780/17
18	Pipe Sleeper Details	1780/18
19	GZH-02 Pile Detail	1780/19
20	Reference Drawing for Culvert 01 detail	1780/20
Drawings of existing tanks, piping system, oily water system, firefighting system, tank gauging system, SCADA/PLC system etc. of existing tank farm are available in PDF format for bidder's/Contractor's reference.		

LIST OF ANNEXURES

ANNEXTURE NO.	DESCRIPTION
01	Bore Hole logs at the nearby locations of Tank No, A, B & C

SECTION – 11

STANDARD FORMS (BID)

FORM OF BID SECURITY

*[This Guarantee form shall be filled in accordance with the instructions indicated in brackets]*_____ *[insert issuing agency's name, and address of issuing branch or office]*

Beneficiary: **Ceylon Petroleum Storage Terminals Limited, Oil Installation, Kolonnawa, Wellampitiya, Sri Lanka.**

.

Date: _____*[insert (by issuing agency) date]*

BID GUARANTEE No.: _____*[insert (by issuing agency) number]*

We have been informed that _____*[insert (by issuing agency) name of the Bidder]* (hereinafter called "the Bidder") has submitted to you its bid dated _____ *[insert (by issuing agency) date]* (hereinafter called "the Bid") for the _____of *[insert name of Contract]* under Invitation for Bids No. _____*[insert IFB number]* ("the IFB").

Furthermore, we understand that, according to your conditions, Bids must be supported by a Bid Guarantee.

At the request of the Bidder, we _____*[insert name of issuing agency]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of _____*[insert amount in figures]* _____ [*insert amount in words]* upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions, because the Bidder:

(a) has withdrawn its Bid during the period of bid validity specified; or

(b) does not accept the correction of errors in accordance with the Instructions to Bidders (hereinafter "the ITB"); or

(c) having been notified of the acceptance of its Bid by the Employer during the period of bid validity, (i) fails or refuses to execute the Contract Form, if required, or (ii) fails or refuses to furnish the Performance Security, in accordance with the ITB.

This Guarantee shall expire: (a) if the Bidder is the successful bidder, upon our receipt of copies of the Contract signed by the Bidder and of the Performance Security issued to you by the Bidder; or (b) if the Bidder is not the successful bidder, upon the earlier of the successful bidder furnishing the performance security, otherwise it will remain in force up to **27.10.2026.**

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

_____

[Signature(s) of authorized representative(s)]

CHECK LIST FOR BIDDERS

CHECK LIST FOR BIDDERS

Bidders are advised to fill the following table.

ITEM	ITB Clause	YES (tick)	REFERENCE
Form of Bid			
Addressed to the **Employer?**	20		
Completed?	20		
Signed?	20		
Bid Security			
Address to the **Employer?**	17		
Format as required?	17		
Issuing Agency as specified?	17		
Amount as requested?	17		
Validity **28 days beyond** the validity of Bid?	17		
Qualification Information			
All relevant information completed?	4		
Signed?	4		
Addendum			
Contents of the addendum (if any) taken in to account?	11		
Bid package			
All the documents given in ITB Clause 13 enclosed in the original and copy?	13		
ITB Clause 21 followed before sealing the Bid package?	21		