DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

MINISTRY OF PETROLEUM RESOURCES DEVELOPMENT

CEYLON PETROLEUM STORAGE TERMINALS LIMITED

DESIGN, SUPPLY, CONSTRUCTION AND COMMISSIONING OF NEW PUMP HOUSE, EXTENSION OF EXISTING GANTRY AND RELATED FACILITIES FOR ENHANCING ROAD TANKER FILLING CAPACITY AT MUTHURAJAWELA TERMINAL

BIDDING DOCUMENT
(Volume 1A – 1B)

Employer:

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

September 2017

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SECTION - I

INSTRUCTIONS TO BIDDERS

SECTION - I

INSTRUCTIONS TO BIDDERS

Instructions to Bidders applicable to this contract shall be those given in Section-1 of the Standard Bidding Document, Procurement of Works, Design and Build Contract, ICTAD Publication No. ICTAD/SBD/04, First Edition (Reprinted with amendments), May 2003, published by the Construction Industry Development Authority (CIDA), "Savsiripaya", 123, Wijerama Mawatha, Colombo 07.

This publication will not be issued with the Bidding 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-V (Volume 1 B) of the Bidding Document.

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

SECTION - III

CONDITIONS OF CONTRACT

SECTION - III

CONDITIONS OF CONTRACT

Conditions of Contract applicable to this Contract shall be those given in Section-III of the Standard Bidding Document, Procurement of Works, Design and Build Contracts, ICTAD Publication No. ICTAD/SBD/04, First Edition (Reprinted with amendments), May 2003, published by the Construction Industry Development Authority (CIDA), "Savsiripaya", 123, Wijerama Mawatha, Colombo 07.

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

Conditions of Contract shall be read in conjunction with Contract Data provided under Section-IV (Volume 1 B) of the Bidding Document, which shall take precedence over the conditions of contract.

Section –V

Standard Forms

Notes on Standard Forms:

- *Bidders shall submit the completed form of Bid security in compliance with the requirement of the bidding documents.*

- *Bidders should not complete the Form of Agreement at the time of preparation 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 BID SECURITY

Where as, ...[*name of the bidder*] (hereinafter called and referred to as "the Bidder") has submitted its Bid dated …… [date] for the **Design, Supply, Construction and Commissioning of New Pump House, Extension of Existing Gantry and Related Facilities for enhancing road tanker filling capacity at Muthurajawela Terminal** (hereinafter called and referred to as "the Bid").

KNOW ALL PEOPLE by these presents that WE ……[*name of organization*] having our registered office at ……..(hereafter called and referred to as "the Guarantor"), are bound unto …….[*name of the Employer*] (hereinafter called and referred to as "the Employer") in the sum of Sri Lankan Rupees/USD …….for which payment well and truly to be made to the said Employer. The Guarantor binds itself, its successor, and assignees by these presents.

SEALED with the Common Seal of the said Guarantor this ……. Day of …….. 20……

THE CONDITIONS of this obligation are:

1. If the Bidder withdraws its Bid during the period of bid validity specified in the bidding documents; or

2. If the Bidder refuses to accept the correction of errors in its Bid; or

3. If the Bidder, having been notified of the acceptance of its Bid by the Employer, during the period of bid validity, fails or refuses to:

    (a) execute the Form of Contract Agreement; or

    (b) furnish the Performance Security, in accordance with the Instruction to Bidders

We undertake to pay the Employer up to the above amount upon receipt of its first written demand, without the Employer having to substantiate its demand, provide that in its demand the Employer will note that the amount claimed by it is due to it, owing to the occurrence of one or more of the above conditions, specifying the occurred condition or conditions.

This Guarantee will remain in force up to and including twenty-eight (28) days after the period of bid validity, and any demand in respect thereof should be received by us no later than the above date.

DATE…… SIGNATURE OF THE GUARANTOR……..

WITNESS…… SEAL

…….
(Signature, Name, and Address)

Notes on Form of Letter of Acceptance

The Letter of Acceptance will be the basis for formation of the Contract as described in Clause 31 of the Instructions to Bidders. This Form of Letter of Acceptance should be filled in and sent to the successful bidder only after evaluation of Bids and after obtaining approval from the relevant authority.

FORM OF LETTER OF ACCEPTANCE

[Letter head paper of the Employer]

……[date]

To : ……..

[name of the Contractor]

…….....

[address of the Contractor]

This is to notify you that your bid dated …… for design, construction and remedying defects of the **Design, Supply, Construction and Commissioning of New Pump House, Extension of Existing Gantry and Related Facilities for enhancing road tanker filling capacity at Muthurajawela Terminal** (Contract No:…….) for the Contract price of Rupees …… *[amount in numbers and words]* as corrected in accordance with Instructions to Bidders and/or modified by a Memorandum of Understanding, is hereby accepted.

The adjudicator shall be ……

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

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

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

The deadline for submission of Performance Security is …… *(fill the date as per Clause 4.2 of Conditions of Contract).*

Authorized Signature : …….

Name and title of Signatory : ……..……..

Name of Agency : ……...…….

FORM OF CONTRACT AGREEMENT

This Agreement made the ……. *[day]* of ……. *[month]* 20…… *[year],* between Ceylon Petroleum Storage Terminals Limited, Oil Installation, Kolonnawa, Wellampitiya. (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 design and execute **Design, Supply, Construction and Commissioning of New Pump House, Extension of Existing Gantry and Related Facilities for enhancing road tanker filling capacity at Muthurajawela Terminal** (Contract No:…….) *(hereinafter called and referred to as "the Works") and* the Employer has accepted the Bid by the Contractor for the design, 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 hereinafter referred to.

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 design, 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 design, execution and completion of the Works and remedying 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.

……	……
Authorized signature of Contractor	**Authorized signature of Employer**
SEAL	SEAL

In the presence of :
Witnesses :

1. Name and NIC/Passport No. …….
   Signature……
   Address ……..

2. Name and NIC/Passport No. …….
   Signature……
   Address ……..

FORM OF PERFORMANCE GUARANTEE

(Unconditional)

NUMBER : …… DATE : ……..
SUM GUARANTEED : …….

To: …… *[name of Employer]* (hereinafter called and referred to as "the Employer")
…….. *[address of Employer]*

Whereas ……..…….. *[name and address of Contractor]* (hereinafter called and referred to as "the Contractor") has undertaken, in pursuance of contract No. …….. dated ……. to execute **Design, Supply, Construction and Commissioning of New Pump House, Extension of Existing Gantry and Related Facilities for enhancing road tanker filling capacity at Muthurajawela Terminal** *(hereinafter called and referred to as "the Contract");*

And Whereas it has been stipulated by the Employer in the said Contract that the Contractor shall furnish the Employer with a Guarantee issued by a recognized organization for the sum specified therein as security for compliance with its obligations in accordance with the Contract.

And Whereas we have agreed to give the Contractor such a Guarantee;

Now Therefore we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of Sri Lankan Rupees ….…..…..…..*[amount of guarantee]*……. *[amount in words]*, such sum being payable in the type and proportions of currencies in which the Contract Price is payable, and we undertake to pay the Employer, upon the Employer's first written demand and without cavil or objection, any sum or sums within the said amount as aforesaid without the Employer's needing to prove or to show grounds or reasons for the Employer's demand for the sum specified therein.

We hereby waive the necessity of the Employer's demanding the said debt from the contractor before presenting us with the demand.

We further agree that no change or addition to or modification of the terms of the Contract or of the Works to be performed thereunder or of the Contract documents which may be made between the Employer and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice or any such change, addition or modification.

This guarantee shall be valid until the date of issue of the Performance Certificate.

Signature and the Seal of the Guarantor : …….

Name of the Organization : ……...

Address : ……

Date : ……

Witness : ……

FORM OF GUARANTEE FOR MOBILISATION ADVANCE PAYMENT

NUMBER : …… DATE : ……..
SUM GUARANTEED : …….

To: …… *[name of Employer]* (hereinafter called and referred to as "the Employer")
…….. *[address of Employer]*

Design, Supply, Construction and Commissioning of New Pump House, Extension of Existing Gantry and Related Facilities for enhancing road tanker filling capacity at Muthurajawela Terminal

In accordance with the provisions of the Conditions of Contract, Sub-Clause 14.2 (Advance Payment) of the above mentioned contract ……. *[name and address of Contractor]* (hereinafter called and referred to as "the Contractor") shall deposit with the Employer a guarantee acceptable to the Employer to guarantee his proper and faithful performance under the said Contract in and amount of ……. *[amount of guarantee]* ……. *[amount in words]*

We, the …….. *[name and the address of the organization]*, as instructed by the contractor, agree unconditionally and irrevocably to guarantee as primary obligator and not as surety merely, the payment to the Employer on his first demand without whatsoever right of cavil and objection on our part and without the Employer's needing to prove or to show grounds or reasons for the Employer's demand for the sums specified therein and without his first claim to the Contractor, in the amount not exceeding Rupees …… *[amount of guarantee]* ……. *[amount in words]* such amount to be reduced periodically by the amounts recovered by the Employer from the proceeds of the contract.

We further agree that no change or addition to or modification of the terms of the Contract or of the Works to be performed thereunder or of the Contract document which may be made between the Employer and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice or any such change, addition or modification.

No drawings may be made by the Employer under this guarantee until we have received notice in writing from the Employer that an advance payment of the amount listed above has been paid to the Contractor pursuant to the Contract.

This guarantee shall remain valid and in full effect from the date of the advance payment received by the Contractor under the Contract until the Employer receives full repayment of the same amount from the Contractor.

Signature and the Seal of the Guarantor : …….

Name of the Organization : ……...

Address : ……

Date : ……

Witness : ……

FROM OF RETENTION MONEY GUARANTEE

NUMBER : …… DATE : ……..
SUM GUARANTEED : …….

To: …… *[name of Employer]* (hereinafter called and referred to as "the Employer")
…….. *[address of Employer]*

Whereas, it has been stipulated by the Employer in clause 14.7 of the Contract that he would release to the contractor the full sum mentioned under the contract in pursuance of clause 14.7, on the contractor furnishing an unconditional guarantee acceptable to the Employer to the full value of the retention money, valid up to 28 days beyond the end of the Defect Notification Period.

We ……..… *[name and address of Guarantor]* as instructed by the Contractor, unconditionally and irrevocably, guarantee to pay the Employer upon the Employer's first written demand and without cavil or objection, any sum of sums within the said amount as aforesaid without the Employer's needing to prove or to show grounds or reasons for the Employer's demand for the sums specified therein and the said amount of Rupees ……. *[amount of guarantee]* ……. *[amount in words]* in the event the contractor fails to carry out his obligations to rectify defects which he is responsible to rectify under the contract.

This guarantee shall be valid up to …….. *[date]*

Signature and the Seal of the Guarantor : …….

Name of the Organization : ……...

Address : ……

Date : ……

Witness : ……

Volume 1 B

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VOLUME 01 (B)

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

MINISTRY OF PETROLEUM RESOURCES DEVELOPMENT

CEYLON PETROLEUM STORAGE TERMINALS LIMITED

Invitation for Bids

DESIGN, SUPPLY, CONSTRUCTION AND COMMISSIONING OF NEW PUMP HOUSE, EXTENSION OF EXISTING GANTRY AND RELATED FACILITIES FOR ENHANCING ROAD TANKER FILLING CAPACITY

AT MUTHURAJAWELA TERMINAL

Contract No: KPR/115/2016

1. The Chairman, Cabinet Appointed Procurement Committee (CAPC) on behalf of the Ceylon Petroleum Storage Terminals Limited (CPSTL), Oil Installation, Kolonnawa, Wellampitiya, Sri Lanka invites sealed bids from eligible and qualified bidders for the "**Design, Supply, Construction and Commissioning of New Pump House, Extension of Existing Gantry and Related Facilities for enhancing road tanker filling capacity at Muthurajawela Terminal, Sri Lanka"** bears total estimated cost of LKR Five Hundred and Fifty Million. Bidding will be conducted through **International Competitive Bidding Procedure, Single Stage, Two Envelope**.

2. Bids should be submitted on the forms available from **Manager Procurement, Ceylon Petroleum Storage Terminals Limited, Procurement Function, New Building, Oil Installation, Kolonnawa, Wellampitiya, Sri Lanka up to 28.03.2018** from 0900 hrs. up to 1430 hrs Local time (+ 5.30 GMT) on any working day upon payment of a non refundable fee of LKR 60,000.00 or remittance of USD 400 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 bidding document by courier service. No liability will be borne by CPSTL on loss or late delivery. Bidding Document (excluding drawings) available in the web is only for viewing purpose and Bids shall be submitted using Hard Copy of the Bidding Document purchased from CPSTL.

Account Holder	**:**	**Ceylon Petroleum Storage Terminals Limited, Oil Installation, Kolonnawa, Wellampitiya, Sri Lanka.**
Account No	**:**	**004-1-001-9-0208672**
Swift	**:**	**PSBKLKLX**
Bank Branch	**:**	**People's Bank, Corporate Bank Division, ANCL Lake house Building, No 35, Dr Wijewardena Mw. Colombo 10, Sri Lanka**.

3. The eligible bidders (individual, Firm or joint venture) shall comply with the following qualification requirement and shall not have been blacklisted.

i. Registration for domestic Bidders

ICTAD (CIDA) registration as follows;

Specialty	**Grade**
Heavy Steel Fabrication	EM1
Geotechnical Piling Board Cast Insitu	GP-B3 or above
Building Construction	C4 or above
Electrical Installation (EL-LV)	EM 2 or above

ii. Registration for foreign bidders, **No registration is required.**

iii. Average annual volume of construction work performed in last five years shall be at least LKR 825 million or equal value in foreign currency.

iv. 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 Project Completion Date, shall be not less than LKR 140 million or equivalent value in foreign currency.

v. Experience as a contractor in the design & construction of a nature and complexity similar to the Works (Building Constructions, construction of 600mm or higher diameter piling work in to the bedrock, piping works as per API Standard 1104, Electrical Installation, design & installation of Programmable Logical Controllers and Industrial Automation). At least one completed project in each specialty for domestic bidder and two completed projects in each specialty for foreign bidder during last ten years.

4. You may obtain further information from, and inspect and acquire the bidding document from **Manager Procurement of the Ceylon Petroleum Storage Terminals Limited, (Tele Phone+94 112572156, 5750764 and Tele Fax: +94 11 2572155 and Email: procure@cpstl.lk)**.

5. Bidding document may be inspected free of charge during any working day from 0900 hrs to 1500 hrs. (+ 5.30 GMT) at the office of the **Manager Procurement, Ceylon Petroleum Storage Terminals Limited, (Tele Phone+94 112572156, 5750764 and Tele Fax: +94 11 2572155 and Email: procure@cpstl.lk)**. However, the bidders can inspect the above bidding document (excluding drawings) from CPSTL website; www.cpstl.lk.

6. Bids shall be valid up to **22.08.2018.**

7. All bids must be accompanied by a bid security of LKR 5,500,000.00 (Sri Lanka Rupees Five Million and Five Hundred Thousand Only) or USD 37,000.00 (US Dollars Thirty Seven Thousand Only). Bid Security shall be valid up to **20.09.2018.**

8. Sealed Bids may be delivered with duplicate to the **Chairman, Cabinet Appointed Procurement Committee (CAPC), C/O Manager Procurement, Ceylon Petroleum Storage Terminals Limited, Procurement Function, New Building, Oil Installation, Kolonnawa, Wellampitiya, Sri Lanka.**

9. The construction period is **365 Calendar Days**.

10. The deadline for submission of bids will be **1430 hrs.** Local time (+ 5.30 GMT) on **29.03.2018** and will be opened soon after the closing.

11. Bidders or their authorized representatives are requested to be present at the opening of bids.

12. A pre-bid meeting will be held at 0930 hrs Local time (+ 5.30 GMT) on **27.02.2018** at the Muthurajawela Terminal, Kerawalapitiya, Wattala, Sri Lanka. Site visit shall be arranged after the pre-bid meeting.

The Chairman, Cabinet Appointed Procurement Committee (CAPC)
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 5750764
Facimile: +94112572155 E-mail: procure@cpstl.lk

Section II

Bidding Data

BIDDING DATA

Item	Sub-Clause	Entry
Employer's Name and Address	1.1 & 9.1	The Employer is Name : **Ceylon Petroleum Storage Terminals Limited** Address: **Oil Installation,** **Kolonnawa,** **Wellampitiya.**
Scope of Works	1.1	Design, Supply, installation and commissioning of new pump house, extension of existing gantry and pipe lines for enhancing filling capacity and related modifications of existing Instrumentation, Electrical and Automation systems as per the section VI – Employer's requirement Located at Muthurajawela Terminal.
Time for Completion	1.2	The Time for Completion for the whole of Works shall be **365 days**.
Delay damages for the Works	1.2	The delay damages for the whole of the Works shall be 0.1% of the initial Contract Price per Day. The maximum amount of delay damages for the whole of the Works shall be 10 % of the Initial Contract Price.
Defects Notification Period	1.2	Defects Notification Period is 365 Calendar Days from Employer's Taking over.
Source of Funds	2.1	The source of funds is Ceylon Petroleum Storage Terminals Limited.
CIDA (ICTAD) registration required	3.1	**Specialty** / **Grade** Heavy Steel Fabrication / EM1 Geotechnical Piling Board Cast Insitu / GP-B3 or above Building Construction / C4 or above Electrical Installation (EL-LV) / EM2 or above
Eligible bidders	3.4	Foreign bidders may submit a bid with or without a local agent(s). If the foreign bidder uses a local agent(s), and if the bid price exceed LKR 250 million the bidder shall provide the following information with the bid. Failing to furnish such information may result the rejection of the bid by the employer. (i) The name and address of the local agent(s) (ii) The year of registration of the business of the local agent(s):

- Authorized agent in Sri Lanka, should register with the Registrar of companies and shall produce a valid copy (legally attested copy) of the certificate of **incorporation** issued by the Registrar of companies Sri Lanka together with the bid.
- Any person who act as an agent or sub-agent, representative or nominee for or on behalf of a Principal, shall register himself ad per public Contracts Act No 3 of 1987 and the Certificate of Registration (FORM PCA 03) issued by the Regidtrar of Public Contracts of Sri Lanka **in terms of section 11 of the said Act** shall be submitted along with the bid.

(iii) A certified copy of the financial audited accounts of the local agent(s) for any one of the two financial years immediately preceding the date of submission of the Bids audited by an independent external auditor in accordance with Sri Lanka auditing standards together with the auditor's report confirming that the accounts were prepared in accordance with the Sri Lanka accounting standard; and

(iv) All details of commissions or gratuities, if any, paid or to be paid to the local agent(s) connected with or relating to the Bid up to contract execution if the bidder is awarded the contract, including any success fees payable.

Qualification Information 3.1, 3.2, 4.1

The following information shall be provided in Section VIII:

- ICTAD registration (if any)
  - Registration number _____
  - Grade _____
  - Specialty _____
- VAT registration number _____
- Attach construction program
- Attach legal status (Sole proprietor, Partnership, Company etc.)
- Attach authentication for signatory
- 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,
- Construction equipment
- Staffing
- Attach Work plan and methods;

Average annual volume of construction work performed in last five years 4.3(a)

Average annual volume of construction work performed in last five years shall be at least **Sri Lanka Rupees Eight Hundred and Twenty Five Million (LKR 825 Million)** or equal value in foreign currency.

Experience as prime contractor	4.3(b)	Should have experience as a contractor in the design & construction of a nature and complexity similar to the Works (Building Constructions, piping works as per API Standard 1104, Electrical Installation and installation of Programmable Logical Controllers) and should have experience in the construction of 600mm or higher diameter piling work in to the bedrock. At least one completed project in each specialty for domestic bidder and two completed projects in each specialty for foreign bidder during last ten years.
Essential equipment	4.3(c)	Proposals for the timely acquisition (own, lease, hire, etc.) of the following minimum required essential equipment shall be entered in Schedule A6 of Section VIII "Schedules" Pilling Equipment, Excavator/JCB, surveying Equipment, Crane, Welding generators etc.
Experience of Contract Manager	4.3(d)	A Contract Manager with five years' experience in works of an equivalent nature and volume, including not less than three years as Manager.
Qualification and experience of proposed design team members	4.3(e), 4.3(f)	Design team shall consist at least one in each of following engineering disciplines having participated in similar capacity project in full time for design within last two years. • Mechanical Engineeer with BSc. Engineering degree or equivalent with 5 years post qualified experience • Civil Engineer with BSc. Engineering degree or equivalent with 5 years post qualified experience • Electrical/Instrument/Elctronics Engineer with BSc degree or equivalent with 5 years post qualified experience
Liquid assets and/or credit facilities required	4.3(g)	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 Project Completion Date, shall be not less than **Sri Lanka Rupees One Hundred and Forty Million (LKR 140 Million)** or equivalent value in foreign currency.
Bid price	13.3	VAT components shall not be included in the rates. The amount written in the Form of Bid shall be without VAT. However VAT component shall be shown separately at the end of the price schedule summary.
Contract is subjected to price adjustment for fluctuation of prices	13.4	The Contract **is not subject to price adjustment** in accordance with Clause 13.7 of the Conditions of Contract.
Currency of bid		The Bid shall be quoted in Sri Lankan Rupees (LKR) and/or Foreign Currency.

14.1 The Bidders shall be allowed to quote only in two Currencies.

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 middle exchange rate published by Central Bank of Sri Lanka, on the date 28 Days prior to date of closing of Bids.

Price Schedule No.	Item No.	Currency

Bid Validity period

15.1 The Bids shall be valid up to **22.08.2018.**

Amount of Bid security

16.1 The Amount of Bid Security LKR 5,500,000.00 (Sri Lanka Rupees Five Million and Five Hundred Thousand Only) or USD 37,000.00 (US Dollars Thirty Seven Thousand Only)

Validity of Bid Security

16.2 The Bid Security shall be valid up to **20.09.2018.**

Pre-Bid meeting

17.1 Pre Bid meeting will be held

At the Muthurajawela Petroleum Terminal, Kerawalapitiya, Wattala, Sri Lanka. Site visit shall be arranged after the pre-bid meeting.

Date **27.02.2018** Time **0930 hrs. Local time (+5.30 GMT)**

Sealing and marking of Bids

19.2 The following information also shall be included in the inner covers of envelope marked as "Envelope 1-Preliminary Information":

(i) Schedule, "Annual turn-over Information";

(ii) Schedule, "Adequacy of Working capital;",

(iii) Schedule, "Construction experience in last ten years

(iv) Schedule, "Major items of construction equipment proposed",

(v) Schedule, "Current Contract Commitments"

19.3 The following information also shall be included in the inner cover of envelope marked as "Envelope 2-Design/Technical Proposal":

(i) Schedule, "Team composition and Task assignment",

(ii) Curriculum Vitae of Key staff;

(iii) Schedule, "Time Schedule for key staff";

(iv) Work program (Design related activities);

(v) Work program (Construction related activities);

19.4 The following information also shall be included in the inner cover of envelope marked as "Envelope 3-Financial Proposal":

(i) Daywork rates schedule

(ii) Schedule, "Overhead and profit percentage for Provisional Sum activities";

19.5(a) The Employer's address for the purpose of Bid submission is

The Chairman, Cabinet Appointed Procurement Committee (CAPC), C/O Manager Procurement,
Ceylon Petroleum Storage Terminals Limited,
Procurement Function, New Building,
Oil Installation, Kolonnawa, Wellampitiya,
Sri Lanka.
Postal Code : 10600

19.5(b) Contract name : Design, Construction and Completion of New Pump House, Extension of Existing Gantry and Pipe Lines for Enhancing Filling Capacity at Muthurajawela Terminal

Contact No. **KPR/115/2016**

Deadline for submission of Bids

20.1 Address for submission of Bids

The Chairman, Cabinet Appointed Procurement Committee (CAPC), C/O Manager Procurement,
Ceylon Petroleum Storage Terminals Limited,
Procurement Function, New Building,
Oil Installation, Kolonnawa, Wellampitiya,
Sri Lanka.
Postal Code : 10600

The deadline for submission of Bids shall be

Date : **29.03.2018** Time : **1430 hrs.** Local time (+ 5.30 GMT)

The Time, Date and Location for bid opening is :

Date : **29.03.2018** Time : **1430 hrs.** Local time (+ 5.30 GMT)

Location :

Office of Manager Procurement,
Ceylon Petroleum Storage Terminals Limited,
Procurement Function, New Building,
Oil Installation, Kolonnawa,
Wellampitiya,
Sri Lanka.

Evaluation and comparison of Bids	27.0	For evaluation and comparison of Bids **Option A** is selected. The Point System for the 6 criteria stipulated in Sub-Clause 27.4 of ITB will be used for evaluation of Technical Proposals. The Bids score more than Minimum Required Points will only be considered for the evaluation of the Price Proposals.
Correction of errors	(28.1)c	Sub-Clause 28.1(c) not modified.
Correction of errors	(28.1)d	Sub-Clause 28.1(d) is applicable.
Amount of Performance Security	32.1	The standard form of Performance Security acceptable to the Employer shall be a Bank Guarantee from a ▪ a commercial bank operating in Sri Lanka approved by Central Bank of Sri Lanka, ▪ a bank based in another country but the guarantee "confirmed" by a commercial bank operating in Sri Lanka approved by Central Bank of Sri Lanka The amount of Performance Security is 5% of the Initial Contract Price.
Percentage of retention	34.1	The retention from each payment shall be 10%. The limit of retention shall be 5% of the Initial Contract Price.
Minimum amount of Interim Payment Certificates	34.2	LKR 20,000,000.00 (Sri Lanka Rupees Twenty Million)
Adjudicator proposed by Employer	(35.1)	The Adjudicator proposed by Employer is **Institute for Construction Training and Development ICTAD / (CIDA).** Fees and types of reimbursable expenses to be paid to the Adjudicator shall be on a case to case basis and shall be shared equally by the Contractor and the Employer.

Section IV

Contract Data

CONTRACT DATA

Sub-Clause 1.1.2.2 **The Employer is**

Name : Ceylon Petroleum Storage Terminals Limited

Address: Oil Installation,
Kolonnawa,
Wellampitiya,
Sri Lanka.

Sub-Clause 1.1.2.4 **Engineer's Name & Address**

Name: Engineering Manager

Address: Ceylon Petroleum Storage Terminals Limited,
Engineering Function,
Oil Installation, Kolonnawa, Wellampitiya,
Sri Lanka.

Sub-Clause 3.1 **Engineer's Duties and Authority**

The Engineer shall obtain the specific approval of the Employer before taking action under the following Sub-Clauses of these Conditions.

(a) consenting to the subletting of any part of the Works under Sub-Clause 4.4 (b),
(b) approving an extension of the Time for Completion, and/or any additional payment under Sub-Clause 19.1 *(Contractor's Claim)* issuing variation under Sub-Clause 13.1 *(Right to vary Employer's Requirement)*, except in an emergency situation, as reasonably determined by the Engineer.
(c) approving additional payment under Sub-Clause 13.3

Notwithstanding the obligation, as set out above, to obtain approval, if, in the opinion of the Engineer, an emergency occurs affecting the safety of life or of the Works or of adjoining property, he may, without relieving the Contractor of any of his duties and responsibilities under the Contract, instruct the Contractor to execute all such work or to do all such things as may, in the opinion of the Engineer, be necessary to abate or reduce the risk. The Contractor shall forthwith comply, despite the absence of approval of the Employer, with any such instruction of the Engineer. The Engineer shall determine an addition to the Contract Price, in respect of such instruction, in accordance with Clause 13.3 and shall notify the Contractor accordingly, with a copy to the Employer.

Sub-Clause 4.1 **Key Personnel**

Schedule of Key Personnel:

Names with qualifications and experience to be written :

(a) Design
……
……

(b) Contract Administration
……

(c) Accounting
……
……

Sub-Clause 4.2 Performance Security

The Performance Security shall be 5 percent of the Initial Contract Price.

The Standard Form of Performance Security acceptable to the Employer shall be a Bank Guarantee from

- a commercial bank operating in Sri Lanka approved by Central Bank of Sri Lanka,
- a bank based in another country but the guarantee "confirmed" by a commercial bank operating in Sri Lanka approved by Central Bank of Sri Lanka

Sub-Clause 8.1 Commencement of Work 8.1 **Start Date:**

The Start Date shall be 14 days from the issue of the Letter of Acceptance.

Sub-Clause 8.2 Time for Completion

The Time for Completion for the whole of Works shall be **365** Calendar days.

Sub- Clause 8.7 Delay Damages

The Delay Damages for the whole of the Works shall be 0.1% of the Initial Contract Price per day.

The maximum amount of Delay Damages for the whole of the Works shall be 10% of the Initial Contract Price.

Sub-Clause 11.1 Defects Notification Period

Defects Notification Period is **365** Days from Commissioning of the Works.

Sub-Clause 13.7 Adjustments for Changes in Cost

Contract **is not subjected** to price adjustment for fluctuation of prices.

Sub-Clause 14.1 Contract Price

The Sub-Clause 14.1 shall be read incorporation with the following:
The Works shall be paid according to work done as per the price proposal.

Sub-Clause 14.2 Advance Payment

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 Central Bank of Sri Lanka,
- a bank based in another country but the guarantee "confirmed" by a bank in Sri Lanka approved by Central Bank of Sri Lanka,

Number and timing of installment for Advance Payment
Two equal instalments.

- **Stage I -** the first ten percent (10%) of advance payment will be paid within 14 days from receipt of both Performance and Advance Payment Guarantee as required under clause 4.2 and 14.2 respectively.
- **Stage II -** balance ten percent (10%) will be paid after successfully mobilization at the site after receipt of mobilization Advance Payment Guarantee.

Sub-Clause 14.3 (c) Retention Money

The retention from each payment shall be 10% of the Interim Payment certificate.
The limit of retention shall be 5% of the Initial Contract Price.

Sub-Clause 14.4 Issue of Interim Payment Certificates

Minimum amount of Interim Payment Certificates shall be LKR 20,000,000.00 (Sri Lanka Rupees Twenty Million)

Sub-Clause 18.2 (b) Employer's Property

Insurance cover to the amount of LKR 40 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.

Sub-Clause 18.4 Professional Indemnity Insurance

This Amount of professional indemnity insurance cover shall be for LKR 5,000,000.00 (Sri Lanka Rupees Five Million)**.**

Sub-Clause 19.2 & 19.4 Failure to Agree Dispute Adjudicator

The appointing entity for appointing the Adjudicator is the **Construction Industry Development Authority (CIDA)**.

Section VI

Employer's Requirement

Contents

Design, Supply, Construction and Commissioning of New Pump House, Extension of Existing Gantry and Related Facilities for enhancing road tanker filling capacity at Muthurajawela Terminal

1.1 Background

This Project is initiated to fulfil the needed product filling facility to cater the increasing demand from 2016 to 2030 considering possible maximum utilization of existing filling facilities at Muthurajawela Terminal.

1.2 System Description

1.2.1 Current configuration & operation

Diesel:
Diesel is transferred to Gantry from Four Loading Tanks TK-33, TK-34, TK-35 and TK-36 using 14 Loading Pumps P03A, P03B, P03C, P03D, P03E, P03F, P03G, P03H, P03I, P03J, P03K, P03L, P03M and P03N having capacity in each pump 50 m3/hr and 70 m head. Road tanker are filled using Twelve Loading bays 2A, 2B, 2C, 2D, 3A, 3B, 3C, 3D, 4A, 4B, 4C & 4D in the Gantry.

Petrol :
Petrol is transferred to Gantry from two Loading Tanks TK-31 and TK-32 using Six Loading pumps P-04A, P-04B, P-04C, P-04D, P-03O and P-03P having capacity in each pump 50 m3/hr and 70 m head. Road tankers are filled using Eight Loading bays 1A, 1B, 1C, 1D, 5A, 5B, 5C & 5D in the Gantry.

Tank farm operations are handled by Tank farm Automation System (‘Experion PKS’, Honeywell) and Gantry Operations are handled by Gantry Automation System (‘TAS’, Honeywell). Existing entire Control system is based on redundant Programmable Logic Control system (PLC).

1.2.2 Proposed configuration & operation

Diesel:
Diesel shall be transferred to Gantry from Four Loading Tanks TK-33, TK-34, TK-35 and TK-36 using 20 Loading Pumps P-03A, P-03B, P-03C, P-03D, P-03E, P-03F, P-03G, P-03H, P-03I, P-03J, P-03K, P-03L, P-03M, P-03N, P-03O, P-03P, P-04A, P-04B, P-04C & P-04D having capacity 50 m3/hr and 70 m head, and road tanker filling using 16 Loading bays 1A, 1B, 1C, 1D, 2A, 2B, 2C, 2D, 3A, 3B, 3C, 3D, 4A, 4B, 4C & 4D through the respective Gantry.

Petrol:

Petrol shall be transferred to Gantry from Two Loading Tanks TK-31 & TK-32 using 14 new loading pumps located at new pump house having capacity 50 m3/hr and head of 70 m and road tanker filling using 12 Loading bays 5A, 5B, 5C, 5D, 6A, 6B, 6C, 6D, 7A, 7B, 7C & 7D through the respective Gantry.

Existing 'EPKS', 'TAS' and PLC systems shall be enhanced to accommodate existing and proposed Tank farm and Gantry operations. In case of such modifications are impossible, new automation systems shall be introduced for entire (existing and proposed) Tank farm and Gantry operations.

1.3 Key Project Personnel

Key project personnel shall be included as listed below. The Bidder shall add other key positions as appropriate.

Contract Manager

- Contract Manager with 5 years' experience in works of an equivalent nature and volume, including no less than the three years as Manager

Design Team

Design team shall be consisted at least one in each of following engineering desciplins having partaicipated in simillar capacity project in full time for design within last two years.

- Mechanical Engineeer with BSc. Engineering degree or equivalent with 5 years post qualified experience
- Civil Engineer with BSc. Engineering degree or equivalent with 5 years post qualified experience
- Electrical/Instrument/Elctronics Engineer with BSc degree or equivalent with 5 years post qualified experience

Field Engineers

- Mechanical Engineeer with BSc. Engineering degree or equivalent with 5 years post qualified experience
- Electrical/Instrument/Elctronics Engineer with BSc degree or equivalent with 5 years post qualified experience

For each nomination, the Bidder shall provide a resume showing the candidate's experience of relevance to this Project.

1.4 Subcontracting Plan

The Bidder shall outline a definitive program for subcontracting all key aspects of the work that will not be carried out directly by the Bidder. It shall be submitted to CPSTL with a clear understanding of the Bidder's intended subcontracting strategy and subcontract management plan along with the Bid.

1.5 Scope of Work

1.5.1 General

1.5.1.1 The scope of work of this contract is defined in general and shall include the following, but not limited to the same. The Contractor shall also carry out all the related work that are not listed in this document, but required for completion of the entire work as specified in this Bidding Document.

1.5.1.2 The Contractor shall procure all materials, equipment, machinery, tools, consumables etc. necessary for completion of above works. Loading, handling and transportation of all materials from supply point / store at work site / Contractor's store as per the requirement of the job.

1.5.1.3 The Contractor shall carryout the design for the proposed facilities to match with the existing facilities and submit the detailed design for total scope of work including design calculations to the Engineer for review before commencement of the work.

1.5.1.4 Diameters and lengths of new pipelines mentioned in this document are minimum sizes. However the Contractor shall increase pipe diameters and lengths as per the design requirements and site requirements. Design calculations shall be forwarded to prove adequacy of the selected pipe sizes and lengths.

1.5.1.5 The proposed modifications at the Muthurajawela Terminal shall be reviewed in such a way that risk is minimized and the following factors shall be considered.

i. HSE risks

ii. Ease of construction

iii. Ease of maintenance

1.5.1.6 Soft copies and hard copies of design reports/calculations, as built drawings, reports, and required documents in English language shall be submitted as directed by the Engineer. Drawings shall be submitted in AutoCAD (dwg) format.

1.5.1.7 The Bidder shall provide the following details.

i. Programme for detail design and issue of drawings.
ii. Work Programme.
iii. Quality control and quality assurance system.
iv. Construction Procedure (Method statement)

1.5.1.8 All construction drawings prepared based on detail analysis/design report here to furnish with supportive calculations and concurrence of the Engineer has to be obtained before

commencement of the intended job. However such concurrence will in no way relive the Contractor for the total design responsibility for said drawings.

1.5.1.9 All items offered shall be brand new with the state of the art technology and proven in field of Oil and Gas industry. Instruments/ equipment shall not be a Prototype.

1.5.1.10 The Contractor shall forward Vendors assurance of availability of spare parts and maintenance support services for the offered equipment for at least 10 years from the date of supply.

1.5.1.11 The Contractor shall arrange pre-shipment inspection of Pumps, Loading Arms and Flow meters at Manufactures site for two CPSTL engineers including accommodation and local expenses on contractors own cost. Also other necessary inspections shall be arranged on contractors own cost whenever they are identified as compulsory to be inspected by client.

1.5.1.12 The Make and model of all offered equipment shall be from a reputed brands used in Oil and Gas industry and country of origin and Manufacture shall be USA, European or Japanese.

1.5.1.13 The Bidder shall submit a comprehensive proposal with the bid to cater the requirements mentioned in scope of work and specifications. The scope of work and specifications listed are the minimum requirements expected. The Bidder shall include in his proposal, the systems, equipment, instruments and methodologies which he deems that shall incorporate to improve the quality and effectiveness of the systems at Muthurajawela Terminal.

1.5.1.14 The Bidder shall specify the reference standards followed for the design. The Bidder shall study the existing Engineering design including System Architecture, controlling philosophy, installed equipment and their connections, etc.

1.5.1.15 Routing of piping shall be based on process requirements, safety and ease of maintenance and operation. Sufficient piping flexibility shall be maintained to meet the equipment allowable loads and not to overstress the flanges. All operational valves, strainers and instrumentation shall be easily accessible from the ground, otherwise access platforms shall be provided.

1.5.1.16 Permanent access shall be provided to Instruments, valves, isolation valves and other items requiring frequent operation or maintenance. Valves for normal and emergency operations shall be operable from floor or from fixed platform

1.5.1.17 The layout shall take into account the requirement for quick escape routes in case of emergency (e.g. consideration shall be given to providing two means of access / escape)

1.5.1.18 Consideration shall be given to space requirements for future equipments and possible expansion of facilities, in accordance with project requirements.

1.5.1.19 The layout shall allow for sufficient access for fire fighting equipment and personnel.

1.5.2 Construction

1.5.2.1 Construction of Gantry Building Extension

i. Constructing an extension to the existing gantry building to accommodate additional 8 loading bays (approximate floor area - 24m x25m). The construction work may consist of demolishing works, piling work, earth work, ground improvements, construction of RCC foundation, gantry floor concreting & steel super structure with Zn / Al roof, Zn / Al cladding, roof plumbing.
ii. Constructing Elevated steel platforms to install top loading arm and steel stairway and self-leveling stair way at each loading bay.
iii. Providing new overhead pipeline racks for extended gantry building and Strengthening existing overhead pipe rack of the gantry building to accommodate new overhead pipelines.
iv. Fabricating Galvanized steel walkway platforms in each new Gantry Islands as per the existing design to interconnect four loading bays including common work area with half wall office cubical.

1.5.2.2 Construction of the new pump house building

i. Constructing a new Pump House (approximate floor area - 33.6m x 5m) adjacent to existing pump house to accommodate 16 pumps and storage space of 10 sq. meters. (14 nos. of pumps will be installed under this scope of work and space for 2 nos. pumps kept vacant for future expansions).
ii. The construction work may consist of piling work, earthwork, ground improvements, construction of RCC foundation & steel super structure with Zn / Al roof, Zn / Al cladding, roof plumbing, construction of RCC pump beds, Pipeline Sleepers for suction pipeline, cable trenches, Draining pits, Steel flat form, constructions to connect pump house drains into Slop oil system and supplying & installation of manually operated single girder overhead traveling crane with 3 ton capacity three way trolley hoist.

1.5.2.3 Pipeline sleepers & pipeline road crossing

i. Excavating road section in front of Administration Building to under pass new 14” discharge pipeline from New Petrol Loading Pumps to gantry and restoring road section after laying of pipeline.
ii. Constructing a culvert to overpass 18”suction pipelines from TK-31 & TK-32 Loading Tanks to new Loading Pump House laid across the road in between new pump house and TK-31 to TK-36 tank row.
iii. Pipeline underpass and Culvert shall be conforming to applicable international standards and specifications.

1.5.2.4 Yard improvement

i. Shifting security fence up to Gate No.03 as per given in the drawings provided.
ii. Removing existing security fence and relocate it as per the given drawing to match the existing fence.

iii. Demolishing remaining concrete works of Weigh Bridge and Weigh Bridge control room and repairing concrete floor.
iv. Concreting bear land area up to Gate No. 03
v. Expanding the existing gantry yard with concrete, to bear the bowser loads (design should be done accordingly) with smooth bowser movements. Modifying existing storm water drainage system (design should be done accordingly) for proper surface flow and prevent water stagnation around gantry.

1.5.3 Petroleum product piping system and equipment

1.5.3.1 Modification of Product Piping System in Existing Gantry Building and Installation of product piping system and related equipment in the Extended Gantry Building

i. Disconnecting Loading Bays 1A, 1B, 1C & 1D from 8" Petrol Gantry Pipeline and Connecting to 14" existing Diesel Gantry Pipeline as per existing loading bay piping configuration.
ii. Disconnecting Loading Bays 5A, 5B, 5C & 5D from 6" Petrol Gantry Pipeline and connecting to 14" new petrol gantry pipeline as per existing loading bay piping configuration.
iii. Removing existing 8" overhead pipeline including branch pipes attached and connecting existing 6" pipeline to 14" existing Diesel Pipeline through isolation gate valves from both gantry end and pump house end.
iv. Laying new 14" Overhead Petrol Pipeline on overhead pipe racks from the gantry battery limit up to new loading bays of extended gantry building including necessary branch pipes and pipeline accessories.
v. Laying Down pipes from New 14" Overhead Petrol Pipeline including necessary branch pipes up to loading arm position in 8 new loading bays including pipeline accessories such as Top Loading Arms, Control valves, pressure relief valves, strainers, air eliminators etc.
vi. Laying other necessary pipelines with accessories and supply and installation of necessary equipment other than specified for the completion of assigned scope of work.

1.5.3.2 Modification of Product Piping system in Existing Loading Pump House

i. Disconnecting Suction and Discharge pipeline connections of P-04A, P-04B, P-04C & P-04D, P-03O & P-03P pumps from Petrol common suction and discharge pipelines and Connecting to Diesel common suction and discharge pipelines with necessary pipeline accessories.

1.5.3.3 Installation of product piping system and related equipment in the New Pump house

i. Supply and installation of 14 nos. of pumps (50m3/hr, 70m) for Petrol conforming to API 610 latest edition (Specifications provided).
ii. Supply and installation of necessary pipeline strainers, valves, flanges etc.
iii. Connecting new 14 nos. of Petrol loading pumps to new 14" common discharge pipeline through branch pipes including pipeline accessories.
iv. Connecting Suction end of new 14 nos. of Petrol loading pumps to new 18" common suction header pipe through branch pipes including pipeline accessories.

1.5.3.4 New Pipeline Installation from Loading Tanks to New Pump House

i. Laying a new 18" pipeline including necessary pipeline accessories connecting TK-31 and TK-32 Petrol loading tanks 12" individual outlets to 18" common suction header pipe of the new petrol pumps in new pump house as per the drawings provided.
ii. Laying a new 18" pipeline adjacent to existing tank common outlet 12" pipeline and disconnecting individual tank 12" outlets from 12" common outlet pipeline and connect them to new 18" pipeline with minimum disturbances to operational activities.
iii. Removing existing tank common outlet 12" pipeline on completion of above pipeline connections.

1.5.3.5 New Pipeline Installation from New Pump House to Gantry

i. Laying of a new 14" pipeline including necessary pipeline accessories connecting new 14" gantry pipeline terminated at the gantry battery limit and 14" new Petrol pump house pump common discharge pipeline.
ii. Use of existing pipeline sleepers and Construction of new Pipeline Sleepers whenever existing pipeline sleepers are not sufficient.
iii. Use of existing draining pits and construction of new draining pits whenever existing draining pits are not sufficient.
iv. Removal of 8" petrol pipeline starting from existing pump house up to battery limit of the gantry.

1.5.4 Slop Oil, Drinking Water & Industrial Water systems

1.5.4.1 Slop oil system shall be installed in extended gantry building and new pump house as per existing slop oil system and connected to existing slop oil piping network.

1.5.4.2 Drinking water and Industrial water system connections shall be added to gantry building extension and new pump house.

1.5.5 Fire detection and protection system

1.5.5.1 Fire Detection and Protection system modifications in extended Gantry Building

i. Fire water/foam sprinkler systems shall be installed in extended gantry building as per the existing sprinkler systems.
ii. New Fire water /foam piping shall be laid for sprinkler systems in extended gantry building.
iii. Installation, testing and commissioning of Fire water Motor Operated Valves at new fire water lines.
iv. Integration of the new Fire MOVs to the existing Relay Controller at Fire Control Room.
v. Modification of the existing MIMIC panel to accommodate the Open/Close remote switches and open/close indicators of new fire water MOVs.
vi. Installation, testing and commissioning of Gas Detectors at Petrol loading bays.
vii. Installation, testing and commissioning of new Alarming panel for Gas Detectors at Fire Control Room.

viii. Installation, testing and commissioning of Heat Detector cable at new petrol loading bays.
ix. Integration of Heat Detector cable to the existing Fire Alarm System. The Contractor shall inspect the existing Fire Alarm system for its version, configurations, communication protocols, etc. in the Fire Control Room at Muthurajawela Terminal.
x. Installation, testing and commissioning of Fire Emergency MOV Buttons (EMOVs) at new petrol loading bays.
xi. Integration of new Fire Emergency MOV buttons with the existing Relay Controlling System

1.5.5.2 Fire Detection and Protection system modifications in New Pump house

i. Fire water/foam sprinkler systems shall be installed in new pump house building as per the existing sprinkler systems.
ii. New Fire water /foam piping shall be laid for sprinkler systems in new pump house building
iii. Installation, testing and commissioning of Fire water Motor Operated Valves at new fire water lines.
iv. Modification of the existing MIMIC panel to accommodate the Open/Close remote switches and open/close indicators of new fire water MOV.
v. Installation, testing and commissioning of Gas Detectors at new Petrol Pump House.
vi. Integration of Gas Detectors to the new Alarming panel at Fire Control Room.
vii. Installation, testing and commissioning of Heat Detector cable at new petrol Pump House.
viii. Integration of Heat Detector cable to the existing Fire Alarm System.

1.5.6 Electrical system

1.5.6.1 Electrical Power Supply

The Contractor should carry out a technical analysis on available capacity of the existing power transformer, Generators, Switch Gears, total connected loads, Distribution Power Cables etc. and submit in writing to the Engineer. Subsequently the Contractor shall produce a proposal on how to connect power supply cables to the existing power system to supply electrical power requirement for the new loading pumps, MOVs, illuminations, Instruments etc. Upon approval of the proposal by the Engineer, contractor shall initiate the work.

1.5.6.2 Electrical system modifications in proposed Gantry Building Extension

i. Supply, Installation and testing of illumination system.
ii. Supply, Installation and testing of Single phase and three phase industrial socket outlets.
iii. Supply of required electrical power for new Product / Fire MOVs and Instruments.
iv. Supply, Installation, testing and commissioning of earthing system.
v. Any other works if required to improve quality and effectiveness of the electrical systems

1.5.6.3 Electrical system modifications in New Pump house

i. Supply, Installation and testing of illumination system.
ii. Supply, Installation and testing of Single phase and three phase industrial socket outlets
iii. Supply, Laying and termination of power supply cables of new motors.
iv. Supply of required electrical power for Product/Fire MOVs and Instruments.
v. Supply, Installation, testing and commissioning of earthing system
vi. Any other works if required to improve quality and effectiveness of the electrical systems

1.5.6.4 Modifications to the existing Electrical Power Substation

i. Supply, Installation, testing and commissioning of Power Control Center (PCC) at the spare space provided inside the existing substation and connecting to the existing bus bar.
ii. Supply, Laying and termination of Power cables

1.5.6.5 Modifications to the existing Motor Control Center (MCC) Room

i. Supply, Installation, testing and commissioning of Motor Control Center (MCC) at the spare space provided inside the existing MCC room for the new pumps.
ii. Supply, Laying and termination of Power cables.

1.5.7 Instrumentation system

1.5.7.1 Modifications to Instrumentation System in the proposed Gantry Extension and Control room

i. Supply, Installation, testing and commissioning of 8 nos. Flow Meters, 8 nos. Preset /Batch controllers (BCU), 8 nos. Digital Control Valves (DCV) and 8 nos. Grounding Devices, where each Flow Meter, DCV and Grounding device shall be connected/ communicated with the relevant BCU and the BCUs shall be connected/ Communicated with Gantry Automation System, Supervisory Control And Data Acquisition (SCADA) System and PLC system.
ii. Site/Field calibration of Instrument if required.
iii. Supply, Installation, testing and commissioning of 1 no. Motor Operated Valve (MOV) and 1 no. Pressure Transmitter at new Petrol pipeline.
iv. Supply, Installation, testing and commissioning of remote control panel at Gantry Control Room to operate the new MOV remotely.
v. Integration of new MOV and Pressure Transmitter to the PLC system and SCADA System.
vi. Supply, Installation, testing and commissioning of Emergency Shutdown Buttons (ESBs) at new petrol loading bays.
vii. Integration of new ESBs to the existing Emergency Shutdown system, PLC system and SCADA System.
viii. Supply, Installation, testing and commissioning of 2 nos. Explosion Proof Emergency Telephones at new extended Gantry. The new Emergency Telephones

shall be connected to the existing Private Automatic Branch Exchange (PABX) system, where the nearest Junction Box of PABX can be utilized.

ix. Introduction of proper protection methodologies to protect instruments/equipment and accessories against lightning, switching surges, surge currents etc.

x. Any other works if required to improve quality and effectiveness of the instrumentation systems.

1.5.7.2 Modifications to Instrumentation System in New Loading Pump House

i. Supply, Installation, testing and commissioning of local operating panel for each pump.

ii. Integration of new Pumps to the PLC system and SCADA System.

iii. Supply, Installation, testing and commissioning of Explosion Proof Emergency Telephone at new Petrol Pump House. The new Emergency Telephone shall be connected to the existing PABX system, where the nearest Junction Box of PABX can be utilized.

iv. Supply, Installation, testing and commissioning of ESBs at new petrol Pump House.

v. Integration of new ESBs to the existing Emergency Shutdown system, PLC system and SCADA system.

vi. Introduction of proper protection methodologies to protect instruments/equipment and accessories against lightning, switching surges, surge currents etc.

vii. Any other works if required to improve quality and effectiveness of the above instrumentation systems.

1.5.7.3 Modification to the existing PLC System

i. The Contractor shall inspect the existing redundant Programmable Logic Controller (PLC) system for expandability/scalability, availability of additional I/O modules, re-programming software and tools, communication protocols etc.

ii. If it is expandable, the Contractor shall supply and install required components, integrate all new instruments/equipments and modify the Program accordingly.

iii. If the existing model is obsolete or not expandable justify the decision in writing to the Engineer, having carried out a technical analysis by the Contractor and submit a proposal to the Engineer. Upon approval of the proposal by the Engineer the Contractor shall replace the existing PLC system with latest version new unit including required accessories with provisions for future expansion. New unit should be compatible with the existing instruments and the SCADA system. The original PLC program which is installed in the existing PLC should be established in new PLC and the new instruments, equipment, accessories and controllers should be integrated to the program and modify the Program accordingly. Migration will have to plan properly without incurring unnecessary extended system down time since the prime objective of this process to minimize shutdown, restore available data in an improved platform.

iv. Operational and controlling philosophy of the PLC system shall be similar to the existing methodology.

v. Redundancy of the PLC system shall be maintained.
vi. If the Contractor proposes a new PLC system, it shall be a reputed brand and proven in industry. This shall be designed to have 20% spare capacity for future expansions.
vii. The Contractor shall inspect the existing Ladder Diagrams and other programming details at Muthurajawela Terminal.
viii. Any other modifications/ Integrations to the PLC system if required.

1.5.8 Automation system

1.5.8.1 Modifications to Software Systems

i. The Contractor shall inspect the existing Terminal Automation System (TAS), Experian Process Knowledge System (EPKS), Data Bases and Server configurations for their expandability and re-programmability.
ii. If those are expandable/ reprogrammable, integrate all new instruments/equipments to the existing software systems.
iii. If the existing software system/model is not expandable/ re programmable justify the decision in writing to the Engineer having carried out a technical analysis by the Contractor and submit a proposal to the Engineer. Upon approval of the proposal by the Engineer CPSTL the Contractor shall replace the existing system

1.5.8.2 Modifications to the Software System in Gantry Extension

i. Integration of new Preset /Batch controllers with Gantry Automation System and SCADA system.
ii. The communication between BCU and Software systems shall be redundant.
iii. Modification of SCADA system to integrate the new MOV. Status of the MOV such as Open, Close, Fault, etc. shall be displayed on relevant graphical display pages in the SCADA System and the MOV shall be operated through the SCADA System.
iv. Integration of new Pressure Transmitter to the SCADA system via PLC, where the process pressure shall be displayed on the relevant graphical display pages of SCADA System.
v. Integration of new ESD system to the SCADA system.
vi. Features, facilities, Generation of reports etc of software systems shall be similar to the existing systems
vii. Any other modifications/ Integrations to the software system if required to improve the quality and effectiveness of the systems.

1.5.8.3 Software System Modifications in New Loading Pump House

i. Integration of new Pumps to the SCADA system via PLC system. Pumps shall be displayed in relevant graphical display pages of SCADA system and the pump controlling and status indication shall be available.
ii. Integration of new ESD system to the SCADA System.
iii. Any other modifications/ Integrations to the TAS/SCADA system if required to improve the quality and effectiveness of the systems.

1.5.8.4 Hardware Modification:

If the existing Hardware capacities/ configurations of servers, processers, network switches, Terminal Servers etc. not sufficient /configurable, justify the decision in writing to the Engineer, having carried out a technical analysis by the Contractor and submit a proposal to the Engineer. Upon approval of the proposal by the Engineer, the Contractor shall replace the existing system

1.5.8.5 Testing

A number of tests must be carried out on the Gantry Automation System, SCADA System and PLC System. The following tests are a minimum requirement and shall be carried out on the total system hardware and software. The systems shall be fully configured to provide all functions similar to the existing systems. Any external system interfaces must be adequately simulated by Contractors' equipment.

1.5.8.6 Pre-Factory Acceptance Test (Pre-FAT)

Prior to the start of the FAT, the Contractor shall conduct a pre-FAT inspection and testing of the new systems to ensure that it is ready for FAT. All control stations shall be functionally tested using simulated inputs and monitoring output. The results of the inspection and review shall be forwarded to the Engineer to assess the state of readiness for FAT.

1.5.8.7 Factory Acceptance Test (FAT)

i. The Contractor shall make necessary arrangements to perform a Factory Acceptance Test (FAT) of the new Gantry Automation System, SCADA System and PLC system at the manufacturer's works at their own expenses. The FAT procedure and test plan shall be submitted to the Engineer at least six (6) weeks prior to the proposed date of the FAT for review and approval.
ii. CPSTL representatives shall have full authority to reject any item or equipment, including all software, hardware and documentation of the new Systems which does not in the opinion of the CPSTL representatives, complies with the relevant standards and specifications/requirements as specified in this Biding Document.
iii. Any test failure on the new Gantry Automation, SCADA and PLC systems or sub-systems, shall be rectified by the Bidder, at his own expense, and shall be re-tested to the satisfaction of the CPSTL representatives.
iv. A copy of the signed off FAT procedure, punch list and related documentations shall be furnished to CPSTL representatives upon successful completion of the FAT.

1.5.8.8 Site Acceptance Test (SAT)

i. The Contractor shall perform a SAT upon the completion of the installation work. The SAT procedure and test plan shall be submitted to the Engineer at least four (4) weeks prior to the proposed date of the SAT for review and approval.
ii. Any test failure on the main Systems or sub-systems, shall be rectified by the Contractor at his own expenses, and shall be re-tested to the satisfaction of the Engineer.

iii. SAT also shall include testing of the merged operation of various sub systems in to an overall one system for monitoring and controlling as specified in contract documents.
iv. A copy of the signed off SAT procedure, punch list and related documentations shall be furnished to CPSTL upon successful completion of the SAT.

1.5.8.9 Commissioning

i. Commissioning follows the completion of SAT and precedes plant startup.
ii. Commissioning shall be performed and controlled by terminal operation staff in coordination with the Contractors' commissioning staff.
iii. Before commissioning starts, terminal operation staff should have been trained on the operation of all new equipment as they will be part of the commissioning team.
iv. At the start of commissioning a full set of up-to-date documentation should be available. As the commissioning proceeds, problems are identified, and solutions are implemented.
v. With the commissioning completed, the terminal is ready for startup and putting in to commercial operation.
vi. All commissioning and startup spares including consumables required up to commissioning, system acceptance and handing over of the systems shall be in the Contractors' scope.

1.5.8.10 Engineering Training

A comprehensive training on new systems such as Gantry Automation System, SCADA System and PLC System for engineering, installation, commissioning and troubleshooting shall be conducted by the Contractor for CPSTL engineers at Manufacturers' training facility. The training shall be completed prior to the system delivery.

1.5.8.11 Site Training for Operation Staff

A comprehensive training on system operation shall be conducted by the Contractor for operation staff members of the terminal. The training shall be conducted at site after the successful commissioning of the Automation Systems.

1.5.9 Industrial water and drinking water systems

i. Industrial water supply shall be provided from existing industrial water piping to extended gantry building and new pump house.
ii. Drinking water supply shall be provided from existing industrial water piping to extended gantry building and new pump house.

1.6 Documents to be updated

All currently available operations procedure documents, Engineering Documents, Vendor Documents and drawings shall be updated and new documents and new drawing shall be prepared and submitted as per the modifications and new installations in the terminal.

1.7 Specifications

1.7.1 Design Basis

The proposed pump house, gantry extension, piping system, fire detection & protection system, electrical system, Instrumentation System, automation systems etc. shall be designed similar to the existing facilities. The Contractor shall inspect the existing facilities at Muthurajawela Terminal.

The design shall be carried out considering personnel and equipment safety during operation and maintenance, reliability in service, maintenance convenience, etc.

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

1.7.2 Design Parameter

1.7.2.1 Terminal modification and Operational Parameters

Parameters	Units	Value
Service	-	Diesel & Petrol
Terminal Piping Nominal Diameters (Note 1)	in	18, 16, 14,12, 8 & 6
Approximate Piping Length	km	As per P&ID
Design Pressure (Ref. Existing P&ID and design basis)	Mpa	As per Existing design basis
Minimum Operating Pressure (Ref. Existing design basis)	Mpa	As per Existing design basis
Maximum Operating Pressure (Ref. Existing design basis)	Mpa	As per Existing design basis
Design Temperature (Ref. Existing design basis)	°C	As per Existing design basis
Operating Temperature (Ref. Existing design basis)	°C	As per Existing design basis
Hydro test Pressure (Note 2)	Mpa	As per Existing design basis
Corrosion Allowance (Ref. Existing design basis)	mm	As per Existing design basis
Flange Rating (Ref. Existing design basis)	#	As per Existing design basis
Design life (Ref. Existing design basis)	yrs	As per Existing design basis
Design Factor (Ref. Existing design basis)	-	As per Existing design basis

Note 1: Selection of piping nominal diameter is based on existing piping in the Muthurajawela Terminal (Ref Existing Design Basis/P&ID)

Note 2: Hydro test Pressure shall be 1.25 x Design Pressure based on ASME B31.3.

1.7.2.2 Product Data

i.	Name	:	Petroleum Refined Products
ii.	Operating Temperature	:	+5 ^{o}C to +45 ^{o}C
iii.	Viscosity	:	1.6 to 200 cst at 38^{o}C
iv.	Specific Gravity	:	0.72 to 0.97 at 15 ^{o}C

1.7.2.3 Environmental Data

i. Ambient Conditions

The ambient temperature to be considered is 30^{0}C.

ii. Soil Data

The soil data obtained by analyzing bore holes in year 2002 during construction of the tank farm are available. Available Soil data can be provided on request.

1.7.2.4 Design Codes and Standards

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

Document Title	Document Number
Centrifugal Pumps For Petroleum, Petrochemical and Natural Gas Industries	API STD 610
Tank Inspection, Repair, Alteration and Reconstruction Welded Steel Tanks For Oil Storage	API 653
Boiler and Pressure Vessel Code (Pressure Vessels)	ASME Sec VIII Div 1
Boiler and Pressure Vessel Code (Welding and Brazing Qualification)	ASME Sec IX
Electrical Equipment For Explosive Gas Atmosphere (International Electrotechnical 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)	

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

1. Local laws (Sri Lankan Authorities)
2. CPSTL Specifications and Guidelines
3. International Codes and Standards

1.7.3 Specifications for Construction

1.7.3.1 General specifications for construction of Gantry Building Extension, New Pump House, Pipeline Sleepers, Culvert and pipeline road crossing.

General Specifications, unless otherwise mentioned elsewhere, which are the Specification for Building Works Volume-I (3rd Edition revised July 2004) & Volume-II (2nd Edition revised October 2001) (ICTAD/CIDA Publication No. SCA/4), Specification for Water Supply, Sewerage and Storm Water Drainage Works 2nd Edition Revised April 2002 (ICTAD/CIDA Publication No. SCA/3/2), Specification for board cast in-situ reinforced concrete piles 1st edition (ICATD publication No. ICTAD/DEV/16) , Specification for Site investigation for building works & sample bill of quantities 1st edition (ICATD publication No. ICTAD/DEV/17), Specification for Construction and maintenance of Roads and bridges 1st edition (ICATD publication No. SCA/5) published by the Construction Industry for development Authority, Savsiripaya, 123, Wijerama Mawatha, Colombo 7, Srilanka.

1.7.3.2 Specifications for Reinforcement.

All reinforcement steel used on the works should be Lanka Tor steel from Sri Lanka Steel Corporation. If it is going to be used steel of any other brand or from any other source he should

obtain prior approval to do so after submitting a Certificate or Origin & Test Certificates from Industrial Technology Institute, National Building Research Organization Laboratory or other registered and approved Laboratory.

1.7.3.3 Specifications for Structural Steels

All structural steel used on the works should be Lanka steel from Sri Lanka Steel Corporation. If it is going to be used steel of any other brand or from any other source he should obtain prior approval to do so after submitting a Certificate or Origin & Test Certificates from Industrial Technology Institute, National Building Research Organization Laboratory or other registered and approved Laboratory.

1.7.3.4 Specifications for Metal Roofing (Ignore the relevant specifications regarding **metal roofing** in specifications mentioned above clause 6.3.1.)

(i) Proprietary profiled metal roof sheets shall be roll-formed from high tensile steel, metallic hot dip coated with an alloy of aluminum zinc and silicon, complying with as 1397-G 550-AZ 150 and having a minimum total coated thickness of 0.47mm.
The flashings, capping and trims & valley gutter etc shall be from the same type of the finished material of the roof cladding.
Purlins shall be "C" sections as specified and shall be cold roll formed zinc coated high strength galvanized steel conforming to AS-1397-Z 280 & Z 245.
Colourbond shall comply with A.S. 2728

(ii) Proprietary roof/ceiling insulation shall be highly reflective aluminum foil laminated Polyethylene foam, Rodent proof sheets.
Single or double sided lamination to thickness as specified and shall be tear resistant fire retardant quality and of approved manufacture brand approved by the Engineer and shall be fixed to the manufacturers specifications.

1.7.4 Specifications for petroleum product piping system and equipment

1.7.4.1 Specification for Pipeline Field Welding

i. General Welding Requirements
Welding and weld inspection shall meet the requirements of API Standard 1104 Editions, "Standard for Welding Pipelines and Related Facilities".
Each welder or welding operator shall be qualified for the established production welding procedure before performing any production welding on any linepipe or piping components installed in accordance with this Specification. Welding Qualification Tests are to be carried out with the same or equivalent equipment as that to be used during installation. These tests shall be performed in a place designated by the Contractor and agreed by CPSTL and shall be conducted under representative installation conditions. The approved welding procedure specification, together with certified welding procedure and welder qualification tests results, shall be on file at the WORK SITE and be made available to the welder and OWNER's and THIRD PARTY at all times. Any work not welded by qualified welders and in accordance with approved welding procedures shall be rejected. Welding personnel to perform arc-air gouging are to be trained and experienced with the actual equipment.

ii. Welding Equipment

Arc welding machines, ammeters, voltmeters, cable, electrode holders, wire brushes, and other accessories shall be of a type, quality, and condition satisfactory to CPSTL.

All welding equipment used shall be the same or equivalent equipment as that qualified in the welding procedure. Welders and welder's helpers shall wear adequate safety equipment during performance of welding.

iii. Welding Consumables

Welding consumable shall conform to AWS Specification requirements, shall be suitable for the intended application and shall produce a weld with required properties, soundness and corrosion resistance in the finally installed condition. Weld metal mechanical properties are to meet base material requirements. Excessively overmatching yield and tensile strengths shall, however, be avoided. Impairment of tensile and toughness properties due to intended heat treatments shall be considered.

iv. Welding Consumable Storage and Handling

Welding consumable are to be treated with care to avoid contamination, deterioration, moisture pick-up and rusting, and are to be stored under dry conditions prior to use. All coated manual welding electrodes shall be kept in hermetically sealed containers, stored in accordance with the SUPPLIER's recommendation, and handled to ensure no mechanical or physical damage is caused to the coating. Damaged packages and any consumables showing any signs of damage, deterioration, corrosion or any other contamination shall not be used.

v. Welder Qualification

Before production welding is performed, all welders shall be qualified in accordance with approved welding procedures, for the process, position, and welding direction to be used. Welders shall make a test weld and satisfy applicable requirements of API 1104. However welders can be qualified by Radiography/N.D.E., without mechanical tests required for the welding procedure qualification, when approved by CPSTL. During qualification welding, welders shall demonstrate that they are proficient in welding operations. The qualification test shall be carried out with the same or equivalent equipment used during production welding, and normally at the premises where production welding is to take place.

Welders shall be qualified based on test results from their respective weld sections, and at Contractors' expense. Production welding shall be performed only by qualified welders and equipment using CPSTL approved procedures.

vi. Weld Joint Design

Piping shall be welded by qualified welders using qualified procedures. The surface to be welded shall be smooth, uniform and free from laminations, tears, scale, grease, paint and other deleterious material that might adversely affect the welding. The joint design and spacing between abutting ends shall be in accordance with the procedure specified in API 1104.

vii. Environmental Factors on Performing Welding

No welding shall be performed when surfaces are wet, when rain is falling on surfaces to be welded or during high winds, unless the welders and the Work are properly protected. High winds are defined as greater than eight kilometers per hour in the welding area. Unacceptable weather conditions shall be determined at CPSTL's sole discretion otherwise in accordance with the procedure specified in API 1104.

viii. Visual Inspection of Welds

All completed production welds shall be thoroughly cleaned by mechanical brushes, buffers or other suitable equipment, prior to visual weld examination by CPSTL as required, and shall meet the requirements of API Standard 1104.

ix. Radiography/Non-Destructive Examination of Completed Welds

Radiography and other forms of Non-Destructive Examination (N.D.E.) shall be carried out on CPSTL request on completed pipeline welds which shall be in compliance with Specification API Standard 1104.

1.7.4.2 **Specifications for Pipeline Flanges**

i. Product Description

a. Carbon Steel Slip-On Flanges

Description	Carbon Steel Slip-On Flanges)Raised Face(to use for pipe lines that transfer petroleum refined products such as Diesel, Gasoline, Kerosene and Fuel Oil
Material	ASTM A105 Normalized
Dimensional Std	ASME B16.5)Serrated(
Pressure Rating	150LB
Identification	ASTM number, ANSI Number, Class and material description shall be marked on the flange as per the requirement of ASMR B16.5

b. Carbon Steel Blind Flanges

Description	Carbon Steel Blind Flanges to use for pipe lines that transfer petroleum refined products such as Diesel, Gasoline, Kerosene and Fuel Oil
Material	ASTM A105Normalized
Dimensional Std	ASME B16.5)Serrated(
Pressure Rating	150LB

Identification	ASTM number, ANSI Number, Class and material description shall be marked on the flange as per the requirement of ASMR B16.5

ii. Inspection and acceptance test

All the flanges shall be thoroughly inspected for dimensional accuracy, uniform surface, edge preparation etc. They shall be within the permissible tolerance limit specified in the relevant standard.

iii. Documents

- Mill Certificate should be supplied with identification numbers or any other reference number marked on flanges.
- All the documents, test certificate shall be submitted in original transparencies and good quality print.
- Manufacture**'**s complete descriptive and illustrative catalogue/ literature
- Detailed dimensions, cross section drawing list, weight etc**.**, for the flanges**.**

1.7.4.3 **Specifications for Carbon Steel Line Pipes and Fittings**

i. Product Description

a. Carbon Steel Line Pipes

Length	12 m
Pipe Schedule	SCH40
Construction	Seamless
Pipe End	Bevel ends
Material	Should conform to API Standard 5L-Gr B or ASTM A 106 B.
Dimensions	Should conform to ANSI B 36.10
Surface Coatings	Internally and externally uncoated.
Pipe End Protection	Both ends of pipe should have protective sleeves.

b. Carbon Steel Fittings (Elbows, TEE's and Reducers)

Pipe Schedule	SCH40
Construction	Seamless
Pipe End	Bevel ends
Material	Should conform to ASTM A 234 Gr. WPB.
Dimensions	Should conform to ANSI B 16.9
Surface Coatings	Internally and externally uncoated.
Pipe End Protection	Ends of Fitting should have protective sleeves.

ii. Operational Condition

Maximum Working Pressure - 150 psi

Nominal Working Temperature- 45^{o}C

Service - Petroleum refined products such as Gas Oil, Gasoline, Kerosene, Fuel Oil and Aviation Turbine.

iii. Inspection

Heat/Batch number, SCH number, API or ASTM number, seamless and material description shall be marked on each item for identification purpose

iv. Documents

Mill Certificate should be supplied with Heat/Batch numbers or any other reference number marked on pipes.

1.7.4.4 **Specification for Painting and Corrosion Protection**

i. Scope

a. This specification covers the requirements for surface preparation and painting or application of corrosion protection coatings to the following materials:-

- Mild Steel
- Cast and Ductile Iron
- Aluminium
- Non-ferrous parts
- Other small parts

b. Surface preparation and corrosion protection coatings application shall be carried out to the requirements of this specification, the relevant British and Swedish Standard, the Paint Manufacturer's recommendation and the Engineer's requirements. Standards referred to in this specification include the following which shall be provided and retained on site by the Contractor and be available to the Engineer:-

- BS 729 Hot Dip Galvanised Coatings on Iron and Steel
- BS 7079 Preparation of steel substrates before application of paints and related products.
- BS 5493 Protective Coating of Iron and Steel Structures against Corrosion
- SIS 05 59 00 – 1967 Swedish Standard

ii. Environment

a. The type of protective coating system required for any particular material will depend on the environment to which it is to be exposed. There are four classes of environmental exposure as follows:-

- Indoor, airconditioned.
- Outdoor, not subject to wetting/spray and indoor, ventilated.
- Corrosive enclosed, humid enclosed or outdoor subject to wetting/spray.
- Immersed (permanent, partial or fluctuating) in potable water, sewage or sewage effluent as appropriate.

b. For any particular item, its material of manufacture together with its environmental exposure classification dictates the required surface preparation and paint system.

iii. Surface Preparation

a. The Contractor shall regard the preparation of surfaces to be painted as a work of fundamental importance, the object of which is to ensure the production of sound, clean and dry surfaces.

b. Surfaces shall generally be prepared by blast cleaning and chemical degreasing.

iv. Blast Cleaning

Blast cleaning shall be carried to the standard recommended by the paint manufacturer (normally Sa 3 or Sa 2½).

a. Blast Cleaning - Environmental Conditions

Blast cleaning shall not be carried out:-

- On surfaces that are moist or that may become moist before the application of primer.
- When metal surface temperatures are less than 3ºC above the dew point or when the relative humidity of the air is greater than 80%.
- In close proximity to subsequent coating operations or near other surfaces susceptible to dust or particle contamination.

Any oil or grease contamination shall be removed by solvent wash prior to blast cleaning. Should any trace of oil or grease remain on the steel substrate following blasting, such contaminated areas shall be rewashed and reblasted.

b. Blast Cleaning - Outdoors

- Where blast cleaning is to be executed outdoors on an exposed site (not under cover) preliminary blast cleaning may be done at night with the prior consent of the Engineer provided that all surfaces so treated shall be reblasted during daylight hours to within the tolerances laid down in this specification before any coating materials are applied.
- This clause does not apply where either automatic centrifugal blast cleaning or manual grit blasting is to be carried out in an adequately covered premises, provided the tolerances laid down in this specification are achieved.

c. Welding After Blast Cleaning

- Blast cleaned surfaces which are later to be joined by welding and where the shop primer is to be applied in excess of 25 micron thickness shall be left uncoated at least 10 cm from such welding area. After welding has taken place these areas shall be reblasted and primed according to specification.
- Where areas are blast cleaned and shop primed prior to fabrication and are later subjected to welding processes special attention shall be given to such areas for removal of weld flux, slag, weld metal splattter, weld heat oxides, slivers and other foreign elements. All weld areas shall be reblasted to ensure that all contaminants are removed and then re-primed according to specification.

d. Blasting - Equipment

- Manual grit blast cleaning equipment shall be approved by the Engineer before use. The air compressors shall be capable of supplying a continuous air volume of at least 6 cubic metres per minute at a minimum pressure of 7 kilograms per square centimetre to each blasting nozzle. The compressed air supply shall be free of water and oil. Adequate separators and traps shall be provided. Accumulations of oil and water shall be removed from air receivers by regular purging. In no case shall an air compressor be allowed to work in excess of 110^{o}C.

e. Blasting - Abrasives

- The abrasive employed in blasting shall be graded steel grit, ball shot, silica safe sand or similar and shall be such that it will produce a surface roughness complying with the one specified by the manufacturer for the primer concerned. The abrasive shall be dry, clean and free from soluble contaminants. Under no circumstances will sand, contaminated or recycled grit be allowed for abrasive blasting.
- At the discretion of the Engineer copper sulphate tests for determining the presence of mill-scale or Potassium Ferricyanide for determining the presence of iron salts shall be undertaken.

v. Mechanical Scraping and Wire Brushing

a. Mechanical scraping and wire brushing may be used where allowed by the paint manufacturer to repair damaged finishes. Extremely thorough scraping shall be carried out (with hard metal scraper and wire brushing). The scraping shall be performed first in one direction and then at right angles. The surface shall then be power brushed vigorously.
b. Loosened material shall be removed during the operation so that the result can be checked.
c. The surface will then have a pronounced metallic sheen.

vi. Surface Conditions

a. Surfaces shall be clean and dry before the application of any coating. If painting takes place over a zinc rich shop primer, which has been exposed outdoors for an extended period, the entire coated surface shall be sweep blasted to remove "white rust" and other contaminants prior to application of the first regular coat.
b. After the appropriate method of surface preparation has been completed, the surface shall be cleaned by vacuum, clean and dry compressed air or by clean brush so as to remove all accumulated grit, shot, dust, etc. thus leaving the surface clean, dry and free of all scale, rust and other forms of contamination.
c. In the event that rusting occurs after the completion of the surface preparation, the surfaces shall again be cleaned in the manner specified.
d. No blast cleaned surfaces shall be allowed to remain unpainted overnight.

vii. Surface Pre-Treatment

a. Unless explicitly specified otherwise, the painting described in this specification shall be preceded by the following pre-treatment.
b. Prior to any surface preparation, oil, grease and other fatty matter shall be removed by means of a water soluble degreasant ensuring that the emulsified mixture is completely removed from the surface with fresh water.
c. Heavy deposits of oil, grease and other fatty matter should be initially broken up by means of an appropriate solvent using clean rags then the above procedure adopted.
d. Areas to be abrasive blasted shall initially be prepared by high pressure jet using water to remove loose and or soluble surface contaminants. If preferred this operation can be carried out in conjunction with the degreasing operation specified above.

viii. Conditions to Observe for Surface Preparation

a. The abrasive blasted or hand tool mechanically cleaned surface shall be examined for traces of smudge, oil or grease. If present they shall be removed either by a water soluble degreasant or solvent washing and the areas prepared back to the specified standard.
b. To prevent abrasive and dust inclusion or any other contamination of freshly coated surfaces, abrasive blasting or hand tool/mechanical cleaning shall not be carried out in areas close to any painting operations.
c. Abrasive blasting and hand tool/mechanical cleaning shall be permitted only in daylight hours, except that rough surface preparation will be allowed during the night in the absence of the inspector, providing the surface is prepared the next morning to the specified standard.
d. Whilst carrying out the specified degree of surface preparation, the paint manufacturers technical product data sheet shall be consulted regarding the limitations relating to relative humidity, dew point, surface/atmospheric temperatures and moisture contamination of substrate.
e. The area of abrasive blasting or hand tool/mechanical cleaning shall be no greater than can be painted within a working day.
f. When carrying out the specified form of surface preparation adjacent to a fully cured painted area, the new blasting or hand tool/mechanical cleaning shall overlap at least 25mm into that area.
g. Following testing of all unpainted areas or additional welds (due to modification and or rectification), these areas shall be given the same degree of surface preparation as the rest of the item/structure.

ix. Coating Application

a. It is preferred that all coating systems should be airless sprayed. However, it is accepted that this method of application is not always possible for operational reasons, and so the scope of this specification includes both brush and airless spray applications.
b. The recommended dry film thicknesses quoted in the paint suppliers data sheets for individual products shall be applied. The paint applied to sharp edges, etc., shall also be of the recommended dry film thickness.

c. The first coat of the specified system shall be applied to abrasive blasted surfaces within four hours from the start of surface preparation. However with hand tool/mechanical cleaned surfaces these areas can be left most of the day before priming. At the discretion of the engineer, the times between the start of surface preparation and the application of the first coat of the specified system can be altered.
d. The abrasive blasted or hand tool/mechanically cleaned surface shall be rendered dust free prior to application of the first coat of the specified system. This can be accomplished by either blowing off with clean dry compressed air, clean brush or using an industrial vacuum cleaner.
e. A minimum of 100mm around edges of abrasive blasting shall be left uncoated unless adjoining a recently prepared and coated surface.
f. Whilst carrying out the coating application, the paint manufacturer's technical product data sheets shall be consulted regarding the limitations relating to relative humidity, dew point, surface/ atmospheric temperatures and moisture contamination of the substrate.
g. Unless otherwise stated in this specification all the coats specified must be applied.
h. After the first coat of the specified system has been applied and cured sufficiently, all welds, angles, brackets etc. shall receive a brush applied stripe coat, which shall be of the same generic type as the second coat of the specified system but of a different colour.
i. Where a multicoat paint system is specified to be used, all intermediate coats shall be of a contrasting colour to differentiate between coats. All runs, skips, sags etc. shall be brushed out smooth whilst that paint coat is still wet.
j. Care must be taken in observing maximum and minimum overcoating times quoted in the paint Manufacturer's literature. Recoating intervals will decrease with higher ambient temperatures.

x. Air Supply
a. The compressed air supply used for surface preparation and paint application must be of sufficient pressure and volume to prepare and coat the surface to the degree/thickness specified, and shall be free of water and oil.
b. Adequate separators and traps shall be provided and these shall be kept emptied of water and oil. In no case shall an air compressor be allowed to work in excess of 110^{o}C. Accumulations of oil and moisture shall be removed from the air receiver by regular purging.
c. The air pressure at the blasting nozzle shall not be less than 6 bar.

xi. Painting and Coating – Materials
a. All coating materials and thinners shall be furnished by the Contractor in original, unopened containers bearing the manufacturer's label and instructions. For materials having a limited shelf life, the date of manufacture and the length of life shall be shown. The oldest paint of each kind shall be used first.
b. All coating materials shall be stirred in a container with a power mixer before use to thoroughly remix the pigments and vehicles. Only thinners specified by the manufacturer shall be used. Mixing and thinning directions as furnished by the manufacturer shall be followed unless modified by the Engineer. Mixing in open

containers shall be done in a well ventilated area. When use of thinner is permitted, thinner shall be added during the mixing process.

c. If a coating material requires the addition of a curing agent, the pot life under application conditions shall be clearly stated on the container label and this pot life shall not be exceeded. When the pot life limit is reached, the spray equipment shall be emptied, remaining material discarded, the equipment cleaned and new material prepared.

d. For paints and thinners, records shall be kept of:-
   - Date of manufacture
   - Shelf life
   - Date of use
   - Daily usage of thinners

e. Storage of paint shall be as required by the manufacturer.

f. Preparation of the paint for application shall be as the Manufacturer's recommendations.

g. Coating materials which have livered, gelled or otherwise deteriorated shall not be used. Thixotropic materials which may be stirred to obtain normal consistency are not subject to this.

h. No paint shall be used on expiry of the Manufacturer's recommended shelf life nor when the paint solids cannot be dispersed by mixing after a maximum of 5% thinners has been added.

i. Thinners shall only be used with the Engineer's permission and then only within the Manufacturer's recommendations. All paints within each type of protective system shall be obtained from the same manufacturer.

j. Application of the paints shall be by the method recommended by the Paint Manufacturer. However, airless spray application only shall be used for paint pipe linings and is the preferred method for the application of epoxy resin based paints.

k. Test plates shall be submitted for approval to the Engineer for each paint system during application on site.

l. These plates will be retained by the Engineer as a reference to quality of application and materials.

m. Repairs to damaged paint systems or galvanised surfaces shall be made in accordance with the manufacturers recommendations and BS 729.

xii. Method of Coating

a. Each coat shall be applied uniformly over the entire surface. Skips, runs, sags and drips shall be avoided. When these occur they shall be brushed out immediately or the materials shall be removed and the surface re-coated. On beams and irregular surfaces, edges shall be stripe coated first and an extra pass made later. Each coat shall be allowed to dry for the time specified by the manufacturer or as directed by the Engineer before application of any succeeding coat.

b. Any primer coat exposed to freezing, excess humidity, rain, dust, etc. before drying, shall be permitted to dry and the damaged area of primer shall be removed and the surface again prepared and primed.

c. The time interval between application of coats shall not exceed that specified for optimum results by the manufacturer.
d. All coatings shall be cleaned as specified by the manufacturer before the next coat is applied.
e. All areas not specifically mentioned in the painting specification must be finished to conform to the adjacent comparable areas.
f. All fixtures and surfaces not to be painted, must be properly protected during painting and upon completion of the work all paint and varnish must be removed from glass, fixtures, covering, etc. Movable parts are not to be painted.
g. All parts such as pipe supports, seatings, cleats, and back to back sections which will become inaccessible after fabrication shall be treated on both surfaces with the full paint system prior to final assembly, thus ensuring adequate protection.

xiii. Film Thicknesses
a. Specified film thicknesses for coating materials shall be strictly observed. Film thicknesses shall be checked with an appropriate film thickness gauge furnished by the Contractor. The Contractor shall calibrate the gauge for thickness range to be checked at least twice per day.
b. When dry film thicknesses are less than those specified, additional coats shall be applied or the coatings shall be removed and reapplied as required at no additional cost. Particular attention shall be paid to full film thickness on edges.
c. In hot weather, such additional precautions as are necessary shall be taken to ensure that the specified dry film thickness of priming or finish coats is obtained.

xiv. Coating Quality
a. Coatings shall be free from pin holes, voids, bubbles, dust, foreign inclusions, and other holidays. Any such defects shall be repaired at the Contractor's expense. Prior to the application of a coating, any damage to the previous coating shall be repaired with the specified material. Upon completion of fabrication any damage to the coating system shall be repaired to the satisfaction of the Engineer.

xv. Spray Application
a. All equipment for spray application may be inspected and approved by the Engineer or his representative before any application begins. Spray guns, hoses and pumps shall be clean before new material is added. An adequate moisture and oil trap shall be installed between the air supply and each application unit.
b. Suitable pressure regulators and gauges shall be provided for the air supply to the application units. Spray equipment and operating pressures shall comply with the manufacturer's recommendations.
c. Coating materials containing heavy pigments that have a tendency to settle shall be kept in suspension during the application by a power driven, continuous agitator.
d. The spray gun shall be held at right angles to the surface and each pass shall overlap the previous one by approximately 50%.
e. All materials contained in this specification may be applied by airless spray unless otherwise specified.

xvi. Brush Application

a. When coatings are to be applied by brushing, brushes shall be of a type and quality that will permit proper application of material.

b. Flat brushes shall not be more than 100 mm wide. No extending handles shall be used on brushes.

c. Brushing shall be done so that a smooth coat, as uniform in thickness as possible, is obtained. There shall be no deep or detrimental brush marks.

d. Paint shall be worked into all corners and crevices. When applying solvent type coatings, care shall be taken to prevent lifting of previous coats.

xvii. Inspection

a. The Contractor shall provide the Engineer with one copy of the paint manufacturer's application, mixing and storage instructions and other relevant data.

xviii. Test Equipment

a. Two complete sets of the following approved test equipment shall be provided and maintained at the site of the Works by the Contractor. One of these sets shall be for the exclusive use of the Engineer.

b. The Contractor shall also ensure that a further identical set is available for the use of the Engineer at all Manufacturer's Works.

- Svensk Photographic Standard SIS 05 59 00.
- Digital Coating thickness meter.
- Wet film thickness combs.
- Hygrometer.
- Maximum and minimum thermometer.
- Flow cup type B No. 4 and timer.
- Surface profile meter such as Elcometer 'Roughtector'.

xix. Application of Epoxy Systems

a. The application of epoxy two pack systems shall be carried out in a weatherproof enclosed building and only when the temperature is such that normal curing rates are achieved.

b. No epoxy paint systems shall be applied when the metal temperature is less than 15^{o}C.

c. Epoxy painted structure shall not be stored in temperatures below 15^{o}C during the curing period (minimum 7 days).

xx. Paints

a. The following paints are acceptable to the Engineer:-

- Primers : Primers compatible with subsequent coats.
- Finishing Paints : Two - component epoxy, chlorinated rubber, or other low chalking impermeable paints with MI0, aluminium or similar pigments.
- Chemical Resistant Paints : Coal tar epoxy or amine cured solvent free high build epoxy.
- U.V. Protection : Polyurethane may be used as a UV protecting topcoat over chemical resistant paint on exposed equipment.

b. The Contractor shall ensure that all paints used in a particular system are fully compatible with each other.

xxi. Corrosion Protection Systems

The following corrosion protection systems are acceptable to the Engineer.

a. Indoor, air conditioned. (mild steel)

- Blast clean
- Primer
- 2 coats high build paint based on acrylic resin, alkyd and non-chlorinated plasticizer.
- DFT 120 microns per coat.
- 1 coat enamel finishing coat based on acrylic resin with non-chlorinated plasticizer.
  DFT 45 microns
  Final DFT 285 microns minimum (not including primer).

b. Outdoor not subject to wetting/spray and indoor ventilated. (mild steel)

- Hot dip galvanize.
- Degrease
- Etch primer
- 2 coats high build paint based on acrylic resin, alkyd and non-chlorinated plasticizer.
  DFT 120 microns per coat.
- 1 coat enamel finishing coat based on acrylic resin with non-chlorinated plasticizer.
  DFT 45 microns
  Final DFT 285 microns minimum (not including galvanising and primer).

c. Outdoor not subject to wetting/spray and indoor ventilated (cast iron and ductile iron).

- Blast clean
- Degrease
- Primer
- 2 coats high build paint based on acrylic resin, alkyd and non-chlorinated plasticizer.
  DFT 120 microns per coat.
- 1 coat enamel finishing coat based on acrylic resin with non-chlorinated plasticizer.
  DFT 45 microns
  Final DFT 285 microns minimum (not including primer).

d. Corrosive/humid enclosed or outdoor subject to wetting/spray (mild steel)

- Hot dip galvanize
- Degrease
- Etch primer
- 2 coats, two component polyamide adduct curved epoxy paint.

DFT 125 microns per coat.

- 1 coat, two component, polyamide adduct topcoat.
  DFT 35 microns per coat.

Final DFT 285 microns minimum (not including galvanising and primer).

e. Corrosive/humid enclosed or outdoor subject to wetting/spray (cast iron and ductile iron)
   - Blast clean
   - 2 coats, two component polyamide adduct cured epoxy paint.
     DFT 125 microns per coat.
   - 1 coat, two component, polyurethane topcoat.
     DFT 35 microns per coat.

   Final DFT 285 microns minimum.

f. Immersed (mild steel)
   - Hot dip galvanize
   - Degrease
   - Etch primer
   - 2 coats, two component, coat tar epoxy.
     DFT 200 microns per coat.
   - 1 coat, two component, coat tar epoxy
     DFT 100 microns.

   Final DFT (not including galvanising and primer) 500 microns minimum.

g. Immersed (Cast iron and ductile iron)
   - Blast clean
   - 2 coats, two component, coat tar epoxy
     DFT 200 microns per coat.
   - 1 coat, two component, coat tar epoxy
     DFT 100 microns.
     Final DFT 500 microns minimum.

xxii. Manufactured Items

a. Manufactured items such as pumps, motors, compressors, air vessels, conduits, etc. shall be coated at the works to the specification laid down for the environment in which they are to operate. In special cases and subject to the approval of the Engineer, items may be paint coated to the manufacturer's standard but when on site the Contractor shall apply a sealing primer compatible with both the manufacturer's standard paint and the top coats specified. Final site painting shall be in accordance with the specification.

b. Non-ferrous and other small parts shall be protected using the same finishing system as that specified for the adjacent ferrous metal structure. Pre-treatments and primers shall be suitable for the metal concerned.

c. When any coating which has been applied at a manufacturer's works is considered by the Engineer to be unsound or incompatible with the specified system, it shall be completely removed and be re-coated in accordance with the specification. Equipment or machinery which is dismantled for recoating shall be re-tested and re-certified by the manufacturer following reassembly.

d. All polished and bright parts shall be coated with an approved rust preventative before despatch and during erection, and this coating shall be cleaned off and the parts polished before being handed over.

xxiii. Emulsion Paint on Metalwork

a. The Contractor shall take every precaution to avoid the application of emulsion paint on metal surfaces. This promotes excessive rusting and should emulsion paint at any time come into direct contact with metalwork, the paint shall be washed off or otherwise removed immediately.

xxiv. Galvanising

a. All mild steel other than that in protected, internal environments shall be hot dip galvanised in accordance with BS 729.
b. Where steel or wrought iron is to be galvanised the galvanising shall be executed after all fabrication has been completed and shall be carried out in accordance with BS 5493. The articles shall be pickled in dilute sulphuric or hydrochloric acid followed by rinsing in water and pickling in phosphoric acid. They shall be thoroughly washed, stoved and dipped in molten zinc and brushed so that the whole of the metal shall be evenly covered and the coating thickness after dipping shall be not less than the BS 5493 System Reference Number recommended in BS 5493 for the particular conditions and in any case not less than 85 microns.

1.7.4.5 **Specification for pipeline valves**

i. Product Description

a. Carbon Steel Gate Valves (Class 150)

Description : Bolted bonnet Carbon Steel Gate Valves of sizes equal or higher than 2” for use of refined petroleum product such as Diesel, Petrol, Kerosene, Fuel oil.

Operational condition:

- 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")

  The valves should be of carbon steel, swing disc, removable seat bolted cover type should conform to following features.

- For sizes equal or higher than 2" design as per general requirements of Standard API 6D, API 600& ASME B16.34.
- End connection should be raised face flange and flange dimensions should conform to ASME B 16.5)Serrated(for sizes equal or higher than 2".
- Face to face dimensions should conform to API6D and ASMEB 16.10
- Valve inspection and testing as per API 598.
- Bore size should be Reduce bore assistant.

Material

- Materials of component of the valve should conform to general requirements of API 600 and

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 Trim 8)13Cr(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.

b. Carbon Steel Gate Valves (Class 800)

Description : Bolted bonnet Carbon Steel Gate Valves of size ¾ "and 1 ½ "for use of refined petroleum product such as Diesel, Petrol, Kerosene, Fuel oil.

Operational condition:

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

  The valves should be of carbon steel, swing disc, removable seat bolted cover type should conform to following features.

- For sizes less than 2" design as per general requirements of Standard API 6D, API 602& ASME B16.34

- End connection should be socket welded and dimensions should conform to ASME B 16.25/16.11 for sizes less than 2".
- Face to face dimensions should conform to API6D and ASME B 16.10
- Valve inspection and testing as per API 598.
- Bore size should be Reduce bore assistant.

Material

- Materials of component of the valve should conform to general requirements of API 602

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 Trim 8)13Cr(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.

c. Double Block & Bleed Valves

Description : Double Block & Bleed Valves for use of refined petroleum product such as Diesel, Petrol, Kerosene, Fuel oil.

Operational condition:

- Pressure Class – 150 LB
- 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")

The valves should be of carbon steel, swing disc, removable seat bolted cover type should conform to following features.

- For sizes equal or higher than 2" design as per general requirements of Standard API 6D, API 600& ASME B16.34.
- End connection should be raised face flange and flange dimensions should conform to ASME B 16.5)Serrated(for sizes equal or higher than 2".
- Face to face dimensions should conform to API6D and ASMEB 16.10
- Valve inspection and testing as per API 598.
- Bore size should be Reduce bore assistant.

Material

Materials of component of the valve should conform to general requirements of API 600 and

Valves Parts Material	Bonnet	WCB	Slip	BS 2789 400/18
	Plug	WCB	Main Seal	Fluoroelastomer
	Seat	13Cr	Packing	PTFE

Stud - ASTM A 193 Gr. B7

Stud Nut - ASTM A 194 Gr. 2H

ii. Inspection

a. Inspection during production

All valves shall be tested as per API 598 by the manufacturer and witnessed by the reputed Independent Third Party Inspection Company approved by CPSTL. All test certificates shall be provided during pre-shipment inspection.

b. Pre-shipment Inspection

- Third party inspection of material test certificates of valves and testing as per API 598 shall be carried out by the by reputed third party inspection.
- Supply of as built detailed drawings, all test certificates, along with the valves.
- Supplier shall supply any special tools required.

iii. Documents

a. Copy of valid API accreditation/license

b. Manufacture's complete descriptive and illustrative catalogue/ literature

c. Detailed dimensions, cross section drawing with parts/material list, weight etc., for the valves and flanges to manufactures standard

d. Drawings for valves with accessories like gear operator, extension bonnet, extended stems with stands bypass etc. giving major salient dimension

e. All documents shall be in English language and SI system of units.

f. Following supplementary documentation certified by third party inspection company approved by CPSTL is required to provide in line with API accreditation as below,

- NDE records
- Hardness test report on pressure containing parts
- Heat treatment certification records
- Pressure test /leak test and other test reports (including pressure, test duration, test medium and acceptance criteria)
- Coating/Painting certification

- Material test certification
- Fire type test certification

g. Supplier shall give a manufacturer's warranty for all the equipment supplied by him for a minimum period of 18 months from the date of shipment or 12 months from the date of installation, whichever is later subject to not exceeding 18 months from the date of dispatch.

iv. Marking

a. Valve marking, symbols, abbreviations etc. shall be in accordance with MSS-SP-25 or the standards referred in specification as applicable. Vendor name, valve rating, material designation, nominal size, direction of flow,)if any(etc. shall be integral on the body.

b. Each valve shall have a corrosion resistance tag giving size, valve tag/code no, security attached on the valve.

c. Paint or ink for marking shall not contain any harmful metal or metal salts such as zinc, lead or copper which cause corrosive attack on heating

d. Carbon steel valve shall be blast cleaned with grit to SSPC SA 2.5 coated with two coats of zinc rich primer.

v. Other Conditions

a. Exterior surface)un machined(should be painted with suitable paint and machined or threaded surface should be coated with easy removable rust preventive coating.

b. 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 Bid whether this can be supplied.

c. Period of guarantee and the conditions of guarantee should be mentioned in the Bid.

d. 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.

1.7.4.6 **Specifications for Top Loading Arms**

i. Product Description

Maximum working pressure	8.5 bar
Flanged connection to pipeline	4"dia., ANSI B 16.5, Class 150, Raised Face
Master balance unit	Torsion spring type
Loading valve	Flange ended, angle type with vacuum breaker, stay open type
Intermediate and drop pipe swivels	Flange ended
Remote control handle and rod	Included
Drain bucket	To be supplied

Quantity and approximate dimensions in mm (± 5% of dimensions will be accepted)

Quantity	Type	First Arm	Secondary Arm	Drop pipe
1 no.	Left hand	3000	2750	2500
1 no.	Right hand	3000	2750	2500
1 no.	Left hand	2500	2750	2500
1 no.	Right hand	2500	2750	2500

Loading Arm Unit shall consist of a double base swivel joint, an intermediate swivel joint, a drop pipe swivel joint, a loading valve, a vacuum breaker and a torsion spring.

ii. Operational Data

Maximum flow rate	2000 l/min
Pressure (Gauge) Range at Meter	0-20 bar
Method of Qty monitoring system	Coriolis mass flow meter / As per Design
Size of Bulk Meter Outlet Flange	4”dia., ANSI B 16.5, Class 150, Raised Face.
Type of loading	Top loading

iii. Gantry Data (As per Existing Design of the gantry)

Minimum height of roof structure from gantry platform	2.74 m
Number of trucks parking at one side at a time (Trucks are parked at either side of the platform)	One
Loader spacing varies from	1.16 m to 2.06 m
Number of metering units per gantry (only along centre line)	04
Size of the gantry platform	11.5 m x 2.5 m

iv. Road Tank Truck Data

Maximum height of the manhole from ground level	3.26 m
Minimum height of the manhole from ground level	2.2 m
Maximum number of manholes per truck	10
Horizontal distance from the centre line of the gantry to the tank truck manhole Maximum	2.74 m
Horizontal distance from the centre line of the gantry to the tank truck manhole Minimum	2.13 m
Compartment depth Maximum	1.6 m
Compartment depth Minimum	1.4
Distance between two corner manholes at either side of the maximum capacity tank truck	10.2 m

vi. Inspection

a. Inspection during production

All Loading Arms shall be tested as per Applicable API Standard by the manufacturer and witnessed by the reputed Independent Third Party Inspection Company approved by CPSTL. All test certificates shall be provided during pre-shipment inspection.

b. Pre-shipment Inspection

- Third party inspection of material test certificates of Loading Arms and testing as per Applicable API Standards shall be carried out by the by reputed third party inspection.
- The Contractor shall arrange pre-shipment inspection of Loading Arms at Manufactures site for two CPSTL engineers on contractors own cost.

v. Documents

a. Copy of valid API accreditation/license

b. Manufacture's complete descriptive and illustrative catalogue/ literature

c. Detailed dimensions, cross section drawing with parts/material list, weight etc., for the Loading Arms to manufactures standard

d. Drawings for Loading Arms with giving major salient dimension

e. All documents shall be in English language and SI system of units.

vi. Other Conditions

Following literature on providing model shall be forwarded.

- Period of guarantee
- Conditions of the guarantee
- Recommended spares of the loading arms and the cost for periods of 5years and 10 years.
- Originals of Internationally Published Brochures
- Preventive maintenance schedule with maintenance instructions.
- Material specifications for all the parts including double base swivel joint, intermediate swivel joint, drop pipe swivel joint, drop pipe, loading valve, torsion spring and vacuum breaker valve.
- Recommended service tools and the cost
- Copy of Maintenance and operational catalogues
- Name and Address of the local agent and their responsibility over the equipment offered.

1.7.4.7 **Specification for Petrol Loading Pumps**

i. Product Description

Pump Size	50 m³/hr with 70 m head
Type of Pump	API Centrifugal Pump
Driver	Electrical motor
Code	API 610 (Latest)
Fluid Handled	Petrol
Sp. Gravity of Fluid	0.975 max
Operating Pressure	Head 70 m
Operating Temp.	50 Deg C
Design Pressure	As per existing pump design pressure
Design Temp.	50 Deg C

Material of Construction

- Pump body : As per existing pump material specification
- Impeller : As per existing pump material specification
- Pump shaft : As per existing pump material specification
- Pump Seal : As per existing pump material specification
- Base plate : As per existing pump material specification

Anti Corrosion Coating

To follow as per the existing specification of similar pumps operating in the terminal.

ii. Inspection

a. Inspection during production

All Pumps shall be tested as per API 610 latest edition by the manufacturer and witnessed by the reputed Independent Third Party Inspection Company approved by CPSTL. All test certificates shall be provided during pre-shipment inspection.

b. Pre-shipment Inspection

- Third party inspection of material test certificates of Pumps and testing as per API 610 latest edition shall be carried out by the by reputed third party inspection.
- Each Pump shall be visually inspected for the following:
- The pump & the driver external surface shall be smooth and show no evidence of foreign matter or inclusions in the new painting.
- There shall be no cracks, bubbles, tears, holes or ruptures in the painting.
- The pump should have been prepared as per the scope of work ready to operate with Petrol.
- The Contractor shall arrange pre-shipment inspection of Loading Arms at Manufactures site for two CPSTL engineers on contractors own cost.

iii. Documents

a. Copy of valid API accreditation/license

b. Manufacture's complete descriptive and illustrative catalogue/ literature

c. Detailed dimensions, cross section drawing with parts/material list, weight etc., for the Pumps to manufactures standard

d. Drawings for Pumps with all accessories giving major salient dimension

e. All documents shall be in English language and SI system of units.

a. Certificates of inspection and test carried out on the pumps and Set of hard and soft copy of the As-Built drawings and documents.

1.7.5 Specifications for Fire Detection and Protection System

Motor Operated Valve (Fire)

Item no.	Item Description	Minimum Specifications / Features
1	Type	Electrical Actuator with butterfly valve
2	Medium	Fire Water
3	Power Supply	Three Phase 415V, 50Hz
4	Max. Pressure	12 bar
5	Local Operation	Push Button for Open and Close
6	Hand Wheel	For Manual Operation
7	Mechanical Limit Switch	Position OPEN/CLOSE
8	Tripping Torque	Opening and Closing
9	Local Indicators	Position Indicator Open, close, fault bulb indicators
10	Remote Operation And Indication	Open, Close, Local, Fault
11	Protection	Ex-proof to Zone 1, T6 gas group IIA / IIB Weather proof to IP 65.
12	Pipe Size	As per P & ID

i. Gas Detectors complete with Alarming Panel

Item no.	Item Description	Minimum Specifications / Features
1	Function	Detection of combustible gases (Hydro Carbon) and Alarming
2	Range	0 – 100 % LEL
3	Overall accuracy	Better than +/- 1% of full scale
4	Repeatability	+/- 2% FSD
5	Response Time	90% of gas reading (without filter unit) in between 10-12 seconds
6	Local Display	LED indication for – Normal, Fault condition & Gas detected condition.
7	Self Check	Continuous self-check for immediate detection of internal failures
8	Protection	Ex-proof to Zone 1, T6 gas group IIA / IIB Weather proof to IP 65.

ii. Heat Detector Cable

Item no.	Item Description	Minimum Specifications / Features
1	Type	Digital switch operation
2	Outer sleeve	Chemical & water resistant Fluoropolymer
3	Construction	Rugged and durable construction.
5	Approval	FM approved
6	Special Note	The cable shall be connected to the existing Fire Alarm System panel. Compatibility shall be checked.

1.7.6 Specifications for Electrical System

1.7.6.1 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. The electrical equipment and material will be designed and manufactured in accordance with the national standards in force in the country of origin and the IEC recommendation.

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-PR-500	American Petroleum Institute

1.7.6.2 Ambient Conditions

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

i. Ambient Temperature,
   Maximum : 40°C
   Minimum : 20°C

ii. Relative Humidity
   Maximum : 95%
   Minimum : 76%

1.7.6.3 Classification of Hazardous Area

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

1.7.6.4 Selection of Electrical Equipment in Hazardous Area

Electrical equipment in the hazardous area shall be in accordance with IEC standards. The details are as follows:

Equipment	**Hazardous areas (IEC)**	
Induction Motors	Zone 1	Ex-d
	Zone 2	Ex-d or Ex-e
Arcing and sparking equipment	Zone 1	Ex-d
	Zone 2	Ex-d
Non-sparking and wiring materials	Zone 1	Ex-d
	Zone 2	Ex-d or Ex-e
Lighting fixtures	Zone 1	Ex-d
	Zone 2	Ex-e

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

1.7.6.5 Design Criteria

i. 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.
ii. The design of electrical system will be carried out, in order to provide safety to personnel and equipment during operation and maintenance, reliability of service, easy of maintenance.

1.7.6.6 Allowable voltage drops

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

- Normal starting of motor, the voltage drop on the 415V bus : 10%
- Normal starting of large motor, the voltage drop on the 415V bus : 10%
- Main feeders : 1%
- All motor feeders at normal operation : 3%
- Lighting feeders : 2%
- Lighting branch circuit from lighting panel to the furthest fittings : 3%

1.7.6.7 Earthing System

i. The earthing protection system shall be designed to protect against indirect contacts (due to failure of insulation), electrostatic discharges and lightning. The systems shall be realized with a common loop.
ii. Earthing systems shall consist of loops installed around all buildings, structures, distribution centers etc.. The network shall consist of earthing conductors, earthing electrodes, equipment conductors and finally connected to existing earthing network.

1.7.6.8 Distribution and Utilization

i. The existing installed capacity shall be used to supply power for the Expansion project.
ii. The distribution system shall be radial type.
iii. The Contractor shall utilize the existing cable tranches for power cabling. The drawings of the existing routs of trenches can be inspected at site.
iv. Sizes of cables shall be designed to cater the total actual load and 20 % extra capacity for the future expansions.
v. Cables shall be made out of stranded Copper conductors, XLPE insulated, Steel Wire Armoured and PVC sheathed according to BS 5467. The voltage rating shall be 600 / 1000 V.

vi. A minimum clearance of 1 meter shall be provided behind all switchboards for access and maintenance. A minimum clearance of 2.5 meters shall be provided in the front of switchboards.
vii. Minimum clearance of 2 meters shall be provided between the highest point of the switchgear and the ceiling.
viii. 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.
ix. Cables of different voltages shall be laid in different cable ladders.

1.7.6.9 Power Control Center (PCC)

i. Outgoing feeder for new MCC shall start from switchgear of 3 pole, 415V, required capacity and shall be metal enclosed for indoor use.
ii. Closing mechanisms shall be of trip-free type, hand operated and shall be provided with electrical and mechanical tripping devices and ON/OFF indication.
iii. Red and green lamps to indicate the closed and open positions respectively shall be provided on circuit breaker panel.
iv. The 415V switchgear shall be supplied with all necessary voltmeters, ammeters, fuse links, small wiring, auxiliary switches and/or relays, space heaters, mechanical indicators, earthing and locking facilities, termination for power and control cables, etc.

1.7.6.10 Motor Control Center (MCC)

i. MCC shall be metal-clad, free standing and totally enclosed type, the minimum enclosure shall be IP 55.
ii. The MCC cubical should have a separate module for each motor and completely wired and marked at each accessories and terminal rows. The new MCC shall have direct on line starters for each motor.
iii. Motor starter units shall be equipped with over current protection, short circuit protection, protection against single phasing and phase unbalance, ground fault protection etc.
iv. 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.

1.7.6.11 Motors

i. All motors will be suitable for the running characteristics of the driven machines.
ii. All motors shall be of 3 phase squirrel cage induction type and all six terminals should be available at terminal box.
iii. The motors enclosures shall be IP55 totally enclosed fan cooled (TEFC) type, and shall be suitable for outdoor use and relevant area classification. Motor insulation class shall be Class F.

1.7.6.12 Lighting

i. The lighting system shall be designed in order to have average illumination level of 300 lux on 0.75 m elevation at Loading Gantry, Pump House, Motor Control Rooms, etc.
ii. Lighting panel enclosures shall be installed indoor in non-hazardous area.

1.7.6.13 Lighting Fixtures

i. In zone 1 areas, all lighting fixtures shall be explosion-proof type.
ii. In zone 2 areas, lighting fixtures shall be increased-safety type.
iii. Lighting fixtures shall be of LED type.

1.7.7 Specifications for instrumentation

Minimum Technical Specifications

1.7.7.1 Preset/Batch Controller

Item no.	Item Description	Minimum Specifications / Features
1	Type	Batch Loading Controller
2	Protection	Ex-proof to Zone 1, T6 gas group IIA / IIB Weather proof to IP 66.
3	Mounting	Field Mounted
4	Power Supply	230V, 50Hz
5	Display	Graphical with Alpha Numeric backlit LCD/LED display. Display parameters shall have pre-set quantity, loaded and remaining volume of the current batch, product name, gross and net volume/ mass, date & time, flow rate, Engineering units, Meter factors ,alarms etc.
8	Input	Input from main product flow meter. 4-20 mA inputs and RTD input. Safety permissive interlock input from grounding unit including loading arm position sensor, overspill detector & ESD push button. Start/Stop/Acknowledge input from Local Control Panel.

Item no.	Item Description	Minimum Specifications / Features
9	Output	Control signals to digital control valve. Pump Demand output for pump sequencing. Unit Pulse Output. Digital Output to Local Control Panel lamps. Configurable alarm outputs.
10	Interlock failure	Flow rate out of limits. Temperature failure. Unable to close valve meter. Common failures. Unauthorized flow. Low flow rate Overfill protection
11	Diagnostics	Status LEDs in front panel for indicating alarm, operation mode & permissive power.
12	Features	Communication facility with the existing Terminal Automation system. Should be configurable to operate the DCV to start and stop in low flow rates to prevent static built-up of the product. Different flow rates are required with maximum flow rate of 1750 l/min. Each unit shall be provided with keypad and alpha numeric display facility. Configuration locking facility to avoid unauthorized access Configurable parameters and sealing provision for weights and measures. Flow cut off through DCV in event of power failure. Emergency stop for signals from emergency shutdown switches. Configuration shall be stored in either volatile or nonvolatile memory with battery backup. Batch Controller should have minimum two levels of security systems along with different password. Shall have self-diagnostic features. Density, Pressure and temperature compensation. Shall be operated in manual mode. Built In surge protection.

Item no.	Item Description	Minimum Specifications / Features
13	System Memory	The Bidder to specify the EPROM & RAM requirements for achieving the full functionality of the preset/batch controllers.
14	Communication	Dual RS 485 / 422 communications to terminal Server.

1.7.7.2 Flow Meter

Item no.	Item Description	Minimum Specifications / Features
1	Function	Measuring of Volume Flow rate and sending measurement to the BCU
2	Type	Mass Flow Meter
3	Accuracy	Mass ± 0.05 % , Volume ± 0.1 % or better
4	Design Flow rate range	As per design basis
5	Max. Flow rate	As per design basis
6	Temperature Output	In-built RTD
7	Line size	As per P & ID s
8	Medium	Liquid , White Oil
9	Operating Pressure	As per design basis
10	Max. Pressure	As per design basis
11	Oper. Temp. Range	20°C - 40°C
12	Maintenance	Minimum Maintenance
13	Power supply	230V, 50Hz
14	Protection	Ex-proof to Zone 1, T6 gas group IIA / IIB Weather proof to IP 65.

1.7.7.3 Digital Control Valve

Item no.	Item Description	Minimum Specifications / Features
1	Function	Controlling of product flow according to the BCU signals
2	Line size	As per P & ID s
3	Medium	Liquid , White Oil
4	Operating Pressure	As per design basis
5	Max. Pressure	As per design basis
6	Max. Oper. Flow	As per design basis
7	Oper. Temp. Range	20°C - 40°C
9	Power supply	230V, 50Hz
10	Protection	Ex-proof to Zone 1, T6 gas group IIA / IIB Weather proof to IP 65.
11	Acting on power failure	Close
12	Maintenance	Minimum Maintenance

1.7.7.4 Grounding Device

Item no.	Item Description	Minimum Specifications / Features
1	Function	To detect proper grounding of the tank truck
3	Signal Input	Through Earth point at loading Area Probe from body of an earthed tank truck
4	Enclosure	Ex-proof to Zone 1, T6 gas group IIA / IIB Weather proof to IP 65.
5	Control output	1 nos. of Potential Free contacts (SPDT) rated for 230VAC,1A
6	Power Supply	230V, 50Hz
7	Accessories	Each Grounding Device shall consist of following : 01 No. Flexible coiled cable of 16 feet with Crocodile Clamp.

1.7.7.5 Motor Operated Valve (Oil)

Item no.	Item Description	Minimum Specifications / Features
1	Type	Electrical Actuator with butterfly valve
2	Medium	Liquid , White Oil
3	Power Supply	Three Phase 415V, 50Hz
4	Max. Pressure	As per design basis
5	Local Operation	Push Button for Open and Close
6	Hand Wheel	For Manual Operation
7	Mechanical Limit Switch	Position OPEN/CLOSE
8	Tripping Torque	Opening and Closing
9	Local Indicators	Position Indicator Open, close, fault bulb indicators
10	Remote Operation And Indication	Open, Close, Local, Fault, Emergency Stop
11	Protection	Ex-proof to Zone 1, T6 gas group IIA / IIB Weather proof to IP 65.
12	Pipe Size	As per P & IDs

1.7.7.6 Pressure Transmitter

Item no.	Item Description	Minimum Specifications / Features
1	Type	Inline Pressure Transmitter
2	Pressure Range	0 – 10 bar
3	Transmitter output	4–20 mA with Digital Signal Based on HART Protocol
4	Process connection	½” NPT (F)

Item no.	Item Description	Minimum Specifications / Features
5	Mounting	Direct on Main Pipeline
6	Isolating diaphragm	316 SS
7	Display	LCD Display with Local Operator Interface
8	Protection	Ex-proof to Zone 1, T6 gas group IIA / IIB Weather proof to IP 65.

1.7.7.7 Emergency Shutdown Button

Item no.	Item Description	Minimum Specifications / Features
1	Type	Key-release type - the operator is pushed in and locks into position to stop; released only with a key.
2	Color cording	Red
5	Construction	Temper Proof
6	Protection	Ex-proof to Zone 1, T6 gas group IIA / IIB Weather proof to IP 65.

1.7.7.8 Emergency Telephone

Item no.	Item Description	Minimum Specifications / Features
1	Type	Analog Telephone
2	Ringing Tone	Shrill warble tones 80 dBA @ 1 meter
3	Dialing	LD (pulse) or MF (tone); User selectable
4	Power Supply	Drawn from telephone line
5	Mounting	Wall or Post
6	Functions	Basic telephone functions
7	Protection	Ex-proof to Zone 1, T6 gas group IIA / IIB Weather proof to IP 65.
8	Special Note	The Emergency telephones shall be connected to the existing PABX System. Compatibility shall be checked.

1.7.7.9 Control Cables

Item no.	Item Description	Minimum Specifications / Features
1	Reference Standard	BS EN 50288-7
2	Conductor type	Annealed copper conductors as per BS 6360
3	Size	As per design basis

Section VII (a)

Form of Bid

FORM OF BID

NAME OF CONTRACT: Design, Supply, Construction and Commissioning of New Pump House, Extension of Existing Gantry and Related Facilities for enhancing road tanker filling capacity at Muthurajawela Terminal

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

We have examined the Conditions of Contract, Employer's Requirements, Schedules and Addenda Nos…… for the execution of the above-named Works. We accordingly offer to design, execute and complete the said Works and remedy any defects fit for the purposes, in conformity with the Bidding Documents and the enclosed Proposal, at the lump sum stated in the Form of Price Proposal included in a separate envelope and submitted with this bid, or other such sums as may be determined in accordance with the terms and conditions of the Contract.

We confirm that our bid includes this Preliminary Information, Financial Proposal, and Design/Technical Proposal sealed in three separate envelopes.

We agree to abide by this Bid until ……. (insert date), and it shall remain binding upon us and may be accepted at any time before that date.

We confirm that, we (including all members of a joint venture and subcontractors) are not associated, directly or indirectly, with the consultant or any other entity in preparation of the design, specifications, and other documents for the Contract.

If this offer is accepted, we will provide the specified Performance Security, commence the Works as soon as reasonably practicable after the Commencement Date, and complete the Works in accordance with the above-named documents within the Time for Completion. We will ensure that the Works will be executed in conformity with the Contract.

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.

We understand that you are not to bound at accept the lowest offer or any other bid you may receive.

……
Signature of the persons duly authorized to sign documents for and on behalf of

Address:……
……..
Date: ……
Company Seal:

Section VIII (a)

Schedules ("A"-Schedules)

SHEDULES

Schedule A1 - Preliminary Information

(enclose this Schedule in the envelope marked, "Envelope 1 - Preliminary Information")

(i) For joint venture, each joint venture partner shall furnish information separately

ITB clause reference	Description		Information (to be filled by the Bidder)	Remarks
3.1	**CIDA Registration (if any)**			Provide certified copies and label them as attachment to Clause 3.1
	Registration number			
	Specialty	**Grade**	**(Yes/No)**	
	Heavy Steel Fabrication	EM1		
	Geotechnical Piling Board Cast Insitu	GP-B2 or above		
	Building Construction	C4 or above		
	Electrical Installation (EL-LV & ELV)	EM3 or above		
	Expiry Date			
4.1 (a)	**Legal Status**			
	If a Joint Venture, names and addresses of Joint venture partners		1. …… 2. …… 3. ……	Provide a certified copy of the Joint Venture Agreement.
	If a Joint Venture, name of the Lead Partner			
	For joint venture, each joint venture partner shall furnish Legal Status separately			
	Name (Lead partner)			Provide certified copies and label them 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 them as attachment to Clause 4.1 (a)	
	VAT Registration Number		
	Name (Partner 2)		Provide certified copies and label them as attachment of 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 them as attachment to Clause 4.1 (a)	
	VAT Registration Number		
	Name (Partner 3)		Provide certified copies and label them as attachment of 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 them as attachment to Clause 4.1 (a)	
	VAT Registration Number		

Schedule A2 - Annual Turn-over Information

(Similar Construction only - Last five years)

(Refer Clause 4.3 (a) of Bidding data and Clause 4.1 of Instructions to Bidders)

(enclose this Schedule in envelope marked, "Envelope 1 - Preliminary Information")

i. For joint venture, each joint venture partner shall furnish information separately

Year	Turn-over	Remarks
1		Attach audited reports and label them as attachment to Clause 4.1 (c) (i)
2		
3		
4		
5		

Schedule A3 - Adequacy of Working Capital

(Refer Clause 4.3 (g) of Bidding data and Clause 4.1 of Instructions to Bidders)

(enclose this Schedule in envelope marked, "Envelope 1 - Preliminary Information")

Source of credit line	Amount	Remarks
		Provide documentary evidence and label them as attachment to Clause 4.1 (c) (ii)
Total		

Schedule A4 - Construction Experience in last five years

(To be attached certified copies of Letter of award, Purchase order and Certificate of Completion)
(enclose this Schedule in envelope marked, "Envelope 1 - Preliminary Information")

(i) If pre-qualification is done the bidders are required to include information subsequent to that submitted with the pre-qualification
(ii) For joint ventures, each joint venture partner shall furnish information separately
(iii) List similar works first

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

Schedule A5 - Design Experience in last five years

(To be attached certified copies of Letter of award , Purchase order and Certificate of Completion)

(enclose this Schedule in envelope marked, "Envelope 1 - Preliminary Information")

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

(ii) List similar works first

Year	Employer	Description of Works	Amount*	Responsibility (%)
		Total		

* Project Cost

Schedule A6 - Major Items of Construction Equipment Proposed

(enclose this Schedule in envelope marked, "Envelope 1 - Preliminary Information")

Type	Capacity	Ownership of the Equipment (Owned by Bidder/ Hired)

Schedule FIN 1 – Current Contract Commitment

(Refer Clause 4.3 (g) of Bidding data and Clause 4.1 of Instructions to Bidders)

(enclose this Schedule in envelope marked, "Envelope 1 - Preliminary Information")

No:	Name of contract/ Employer	Awarded sum & date	Construction period (Months)	Value of work completed up to ……. Rs. Cts	Value of balance work Rs. Cts.

[Certified copies of Letter of award, Purchase order and last interim payment certificates should be attached]

CHECK LIST FOR BIDDERS

Envelop	Item	Yes (tick)	Reference
Envelop 1			
	Preliminary Information (Original & Copy)		
	Volume 1A of the Bidding Document		
	Invitation to Bid		
	Section II - Bidding Data		
	Section IV - contract Data		
	Section VI - Employer's Requirement		
	Power of attorney for the signatory of the bid		
	Duly filled and signed Form of Bid		
	Bid Security		
	Duly filled "A" Schedules - "General Information"		
	Other information listed in Bidding Data		
	Any other information, bidder may wish to include		
Envelop 2			
	Design / Technical Proposal (Original & Copy)		
	Duly filled and signed Form of Design / Technical Proposal		
	Duly filled "B" Schedules - "Comments and suggestions on employer's requirement" (if any)		
	Contractor's Proposal		
	Drawings (if any)		
	Other information listed in Bidding Data		
	Any other information, bidder may wish to include		
Envelop 3			
	Price Proposal (Original & Copy)		
	Duly filled and signed Form of Price Proposal		
	Duly filled "C" Schedules - "Price Schedules"		

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

MINISTRY OF PETROLEUM RESOURCES DEVELOPMENT

CEYLON PETROLEUM STORAGE TERMINALS LIMITED

DESIGN, SUPPLY, CONSTRUCTION AND COMMISSIONING OF NEW PUMP HOUSE, EXTENSION OF EXISTING GANTRY AND RELATED FACILITIES FOR ENHANCING ROAD TANKER FILLING CAPACITY AT MUTHURAJAWELA TERMINAL

BIDDING DOCUMENT
(Volume 2)

Employer:

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

September 2017

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Section VII (b)

Form of Design and Technical Proposal

FORM OF DESIGN / TECHNICAL PROPOSAL

NAME OF CONTRACT: Design, Supply, Construction and Commissioning of New Pump House, Extension of Existing Gantry and Related Facilities for enhancing road tanker filling capacity at Muthurajawela Terminal

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

We have examined the Conditions of Contract, Employer's Requirements, Schedules, and Addenda Nos. ……. for the execution of the above-named Works.

We accordingly offer to design, execute and complete the said Works and remedy any defects, fit for purpose in conformity with these Bidding Documents and the enclosed proposal. We are hereby submitting our Bid, which includes this Design/Technical Proposal, Preliminary Information and a Financial Proposal sealed in separate envelopes.

We understand that you are not bound to accept the lowest offer or any other bid you may receive.

…….
Signature of the persons duly authorized to sign documents for and on behalf of

Address: ……..……..
……..
Date: …….……
Company Seal:

Section VIII (b)

Schedules-related to Design and Technical Proposal ("B" Schedules)

Schedule B1 - Comments and Suggestions on Employer's Requirements

(enclose this schedule in envelope marked, "Envelope 2-Design and Technical Proposal")

Bidders may include observations made on Employer's Requirements and any suggestions for consideration

Schedule B2 - Contractor's Proposal

(enclose this schedule in envelope marked, "Envelope 2-Design and Technical Proposal")

Sheet 1 of …..

This schedule should be complete considering all the requirements given in the Employer's requirements, including design criteria, specifications and technical data (use additional pages if necessary)

Schedule B3 - Team Composition and Task Assignment

(enclose this schedule in envelope marked "Envelope 2 - Design and Technical Proposal)

A. Design Staff

Name	Position	Task

B. Construction Management

Name	Position	Task

Schedule B4 - Curriculum Vitae of Key Staff

(To be submitted for each of key staff)
(enclose Curriculum Vitae in envelope marked, "Envelope 2 - Design and Technical Proposal")

Proposed Position :	
Name of Staff :	
Profession :	
Date of Birth	
Membership in Processional Societies :	
Key Qualifications :	Give an outline of staff member's experience most pertinent to tasks or assignment. Describe degree of responsibility held by staff member on relevant previous assignments and give dates and locations. Use about half a page.
Education :	
Employment Record :	
Certification :	I, the undersigned, certify that to the best of my knowledge and belief, the information is correct.

Signature of staff Member Date

Schedule B5 - Time Schedule for Key Staff

(enclose this schedule in envelope marked, "Envelope 2 - Design and Technical Proposal)

			Months (in the Form of a Bar Chart)															
Name	**Position**	**Activities**	**1**	**2**	**3**	**4**	**5**	**6**										**Number of Months**

Full-time : ..... Part-time : .....

Schedule B6 - Work Programme (Design Related Activities) (enclose in envelope marked, "Envelope 2 - Design and Technical Proposal)															
	(1st, 2nd etc. are months from the Start Date)														
Design Activity	**1st**	**2nd**	**3rd**	**4th**	**5th**	**6th**									

Schedule B7 - Work Programme (Construction Related Activities)

(enclose this schedule in envelope marked, "Envelope 2 - Design and Technical Proposal)

Sheet 1 of ……

	(1st, 2nd etc. are months from the Start Date)														
Construction Activity	**1st**	**2nd**	**3rd**	**4th**	**5th**	**6th**									

Section IX

Drawings

Drawing List

Drawing Title	Drawing Number
Site Layout	1591-1
Site Layout - Proposed Work	1591-2
Proposed Loading Gantry modifications / Building Extension & Pipe line Modifications	1591-3
Proposed Pump house	1591-4
Modifications to Existing Pump house	1591-5
System Architecture Drawing	
Single line diagram for sub station	08020.002.E411.20-29
Fire alarm control system block diagram	A0013 000 DWS 1512 02
Front arrangement of fire control panel	A013 000 DWL 1521 02
P & I diagram loading pump	A013 000 PID 0021 16
P & I diagram Gantry	A013 000 PID 0021 17

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

MINISTRY OF PETROLEUM RESOURCES DEVELOPMENT

CEYLON PETROLEUM STORAGE TERMINALS LIMITED

DESIGN, SUPPLY, CONSTRUCTION AND COMMISSIONING OF NEW PUMP HOUSE, EXTENSION OF EXISTING GANTRY AND RELATED FACILITIES FOR ENHANCING ROAD TANKER FILLING CAPACITY AT MUTHURAJAWELA TERMINAL

BIDDING DOCUMENT
(Volume 3)

Employer:

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

August 2017

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Section VII (c)

Form of Price Proposal

FORM OF PRICE PROPOSAL

NAME OF CONTRACT: Design, Supply, Construction and Commissioning of New Pump House, Extension of Existing Gantry and Related Facilities for enhancing road tanker filling capacity at Muthurajawela Terminal

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

We have examined the Conditions of Contract, Employer's Requirements, Schedules and Addenda Nos…… for the execution of the above-named Works. We accordingly offer to design, execute and complete the said Works and remedy any defects fit for the purposes, in conformity with the Bidding Documents and the enclosed Proposal, for the fixed lump sum of Sri Lankan Rupees…….. or other such sums as may be determined in accordance with the terms and conditions of the Contract. The above amounts are in accordance with the Price Schedules herewith and are made part of this bid. We conform that our bid includes this Price Proposal, Design/Technical Proposal, and General Information sealed in separate envelopes.

We accept your suggestions for the appointment of the Adjudicator, * as set out in Bidding Data.

We agree to abide by this Bid until …….. (insert date), and it shall remain binding upon us and may be accepted at any time before that date.

We confirm that, we (including all members of a joint venture and subcontractors) are not associated, directly or indirectly, with the consultant or any other entity in preparation of the design, specifications, and other documents for the Contract.

If this offer is accepted, we will provide the specified Performance Security, commence the Works as soon as reasonably practicable after the Commencement Date, and complete the Works in accordance with the above-named documents within the Time for Completion. We will ensure that Works will be executed in conformity with the Contract.

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.

We understand that you are not bound to accept the lowest offer or any other bid you may receive.

……..
Signature of the persons duly authorized to sign documents for and on behalf of
Address : ……
……
Date : …….

* If the Bidder does not accept, this paragraph may be deleted and replaced with:

We do not accept your suggestion for the appointment of the Adjudicator. We have included our suggestion in the Bid, but this suggestion is not a condition of this offer. If this suggestion is not acceptable to you, we propose that the Adjudicator be jointly appointed in accordance with sub-clause 35 of the Instructions of Bidders.

Section VIII (c)

Schedule-related to the Price Proposal (“C” Schedules)

Schedule C1 – Price Schedule *(enclose all price schedules in envelope marked, " Envelope 3 – Financial Proposal")* Sheet 1 of …..		
Activity 1: Preliminaries		
Item No:	**Sub-activity description**	**Amount** **……..….** ***(Specify Currency)***
1.1	Guarantees, Securities and Insurances	
1.2	Contractor's facilities	
	Any other Sub-activity **(bidder to include)**	
1.A1		
1.A2		
1.A3		
1.A4		
	Total for Activity 1 carried to summary	

Schedule C1 – Price Schedule *(enclose all price schedules in envelope marked, " Envelope 3 – Financial Proposal")* Sheet 2 of …..		
Activity 2: Design		
Item No:	**Sub-activity description**	**Amount**

		……..…. *(Specify Currency)*
2.1	Surveying and Sub Surface Investigation	
2.2	Design of Extension & Modification of Gantry Building & Gantry Equipment, New Pump House and Pumps, Yard improvement, Petroleum product piping system & all related equipment, Slop oil system, Fire detection and protection system, Electrical System and Instrumentation system	
	Any other Sub-activity (bidder to include)	
2.A1		
2.A2		
2.A3		
2.A4		
	Total for Activity 2 carried to summary	

Schedule C1 – Price Schedule

(enclose all price schedules in envelope marked, " Envelope 3 – Financial Proposal")

Sheet 3 of …..

Activity 3: Construction, Supplying & Installation

Item No:	Sub-activity description	Amount ……..…. *(Specify Currency)*
3.1	**Construction**	
3.1.1	Construction of Gantry Building Extension	
3.1.2	Construction of the New Pump House Building	
3.1.3	Pipeline Sleepers and Pipeline Road crossings (pipeline under pass & Culvert), Yard improvement	
3.2	**Petroleum product piping system and equipment**	
3.2.1	Modification of Product Piping System in Existing Gantry Building and Installation of Product Piping System and related equipment in the extended Gantry Building.	
3.2.2	Installation of Product Piping System and Related Equipment in the New Pump House, Modification of Product Piping System in Existing Loading Pump House.	
3.2.3	New Pipeline Installation from Loading Tanks to New Pump House, New Pipeline Installation from New Pump House to Gantry, Slop Oil, Drinking Water and Industrial Water System extension up to extended gantry area and New Pump House.	
3.4	**Fire Detection and Protection System**	
3.4.1	Fire Detection and Protection system modifications in extended Gantry Building	
3.4.2	Fire Detection and Protection system modifications in New Pump house	
3.5	**Electrical System**	
3.5.1	Electrical system modifications in proposed Gantry Building Extension	
3.5.2	Electrical system modifications in New Pump house	
3.5.3	Modifications to the existing Electrical Power Substation	
3.5.4	Modifications to the existing Motor Control Center (MCC) Room	
3.6	**Instrumentation System**	
3.6.1	Modifications to Instrumentation System in the Proposed Gantry Extension and Control room	
3.6.2	Modifications to Instrumentation System in New Loading Pump House	
3.6.3	Modification to the existing PLC System	

3.7	**Automation System**	
3.7.1	Modifications to Software Systems (Gantry Automation System and SCADA System)	
3.7.2	Hardware Modification	
3.7.3	Testing, Factory Acceptance Test (FAT), Site Acceptance Test (SAT), Commissioning	
3.7.4	Engineering Training, Site Training	
	Any other Sub-activity (bidder to include)	
3.A1		
3.A2		
3.A3		
	Total for Activity 3 carried to summary	

Schedule C4 – Price Schedule

(enclose this schedule in envelope marked, " Envelope 3 – Financial Proposal")

Sheet … of …..

Summary

Activity No:	Activity description	Amount ……..…. *(Specify Currency)*
1	Preliminaries	
2	Design	
3	Construction, Supplying & Installation	
4		
5		
6		
7		
8		
9		
	Any other activity (bidder to include)	
A		
B		
C		
	Sub Total	
	Discounts	
	Total	
	Amount carried to Form of Bid in Sri Lankan Rupees (*Total amount in above row to be converted to Sri Lankan Rupees using the middle exchange rate of Central Bank of Sri Lanka as at 28 days before bid closing date*)	
	Add VAT	
	Total inclusive of VAT	