PETROVIETNAM PVOIL	**PETEC TRADING AND INVESTMENT CORPORATION**
PROJECT	**EXPANSION OF 40,000M³ STORAGE CAPACITY AT PETEC HAI PHONG**
PACKAGE	**ENGINEERING, PROCUREMENT, CONSTRUCTION AND INSTALLATION**

TECHNICAL REQUISITION DOCUMENT FOR

GASKETS

A	15/10/2025	Issued for Bid	NMH	PAD	PQP	VLT
Rev.	Date	Purpose	Prepared	Checked	Reviewed	Approved

EPC CONTRACTOR

PTSC THANH HOA | DAI DUNG | PHUONG ANH

PTSC THANH HÓA THANH HÓA - ĐẠI DŨNG III - PHƯƠNG ANH CONSORTIUM

Document No.:

PETEC-DD-TRD-010

REVISION RECORD SHEET

No	Content of Revision	Rev	Date (dd/mm/yyyy)
1	Issued for Bidding	A	15/10/2025

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1. INTRODUCTION

1.1. PROJECT BACKGROUND

Project name: Expansion of 40,000m³ Storage Capacity at PETEC Hai Phong Petroleum Terminal Project

Client: PETEC TRADING AND INVESTMENT CORPORATION

Contractors: PTSC THANH HOA – DAI DUNG III– PHUONG ANH

The total expanded capacity is 40,000m³ as follows:

- 01 tank 10,000m³ tank (with float): containing RON95 – T33

- 03 tanks of 10,000m³: containing DO - T34, T35, T36

- 01 tanks of 1500m3 containing fire water and auxiliary items....

1.2. PURPOSE

This document outlines the minimum technical requirements for the manufacture, supply, testing, inspection, packing & transportation, commissioning activities and documentation of Gaskets.

The BIDDER/ MANUFACTURER shall ensure that all materials and services supplied meet the requirements of this document, the Material Take-Off, Project Specifications and the Codes & Standards and Specifications referenced herein.

1.3. DEFINITIONS AND ABBREVIATIONS

PROJECT	EXPANSION OF 40,000M³ STORAGE CAPACITY AT PETEC HAI PHONG
CLIENT	PETEC TRADING AND INVESTMENT CORPORATION
EPC CONTRACTOR	CONSORTIUM: PTSC THANH HOA – DAI DUNG III – PHUONG
SUPPLIER/ BIDDER	SUPPLIER/BIDDER SHALL CARRY OUT THE WORKS OF SUPPLY, TESTING, INSPECTION, PACKAGING AND TRANSPORTATION OF GASKETS
SCOPE OF WORKS	SUPPLY, TESTING, INSPECTION, PACKAGING AND TRANSPORTATION OF GASKETS

2. SCOPE OF SUPPLY AND WORK

2.1. ITEMS AND QUANTITIES

The items and quantities shall be as specified in the Attachment #1 Material Take Off (MTO).

2.2. SCOPE OF SUPPLY AND SERVICE

All items shall be completed in accordance with the requirements specified in this requisition such as MTO, project specifications and other documents attached herewith.

Refer to Attachment #1 Material Take Off (MTO) for the detailed.

2.3. SCOPE OF WORK

The BIDDER/ MANUFACTURER will use his current, pre-engineered, or standard designs to meet the requirements specified below, as well as the MTO, project specifications, and any attachments attached to these documents.

Design, manufacturing, testing, supply, packing and delivery all items as specify in the Attachment #1 Material Take Off (MTO).

The BIDDER/ MANUFACTURER shall also provide supervision of complete erection, site testing, start up and commissioning and performance guarantee testing of these items, if required.

2.4. OUT OF SCOPE

Storage items at site.

Fabrication and installation Piping works.

2.5. DELIVERY TIME

The contractor shall carry out the work in accordance with the project schedule.

For more details, please refer to Attachment #5 Project Schedule.

3. TECHNICAL REQUIREMENTS

3.1. GENERAL

The Package shall be strictly in accordance with specifications, codes, and standards specified in Attachment #2 Technical Support Document.

Compliance by the BIDDER/ MANUFACTURER with the provision of this specification does not relieve him of his responsibility to furnish the package/ material and accessories of a proper design to meet the specified duty and / or local codes governing health and safety.

All applicable documents mentioned below are attached with the request for inquiry. However, if the BIDDER/ MANUFACTURER is not in possession of any of the listed or referenced PURCHASER documents, it shall be BIDDER/ MANUFACTURER's sole responsibility to obtain them from the PURCHASER. Otherwise, it shall be assumed that the BIDDER/ MANUFACTURER has received, read and understood the total contents of the documents.

All materials and parts shall be new and un-used and free from defects and imperfections that would adversely affect the life or performance of the system.

Vendor data shall include detailed design drawings and updated data sheets of each material and appurtenances.

All documentation related to facilitating design appraisal approvals and inspection from Purchaser appointed Certification Authority (CA) and QA/QC Inspector (ITP) shall also be included in Vendor's scope of supply

3.2. DESIGN LIFE, AVAILABILITY AND RELIABILITY

The design life of the facility and all associated equipment, components and systems is minimum 20 years.

All components which for practical, safety or cost-efficiency reasons are unable to meet the required design life shall be identified as soon as possible. Their expected service life shall be informed to PURCHASER and provision made in the system design for maintenance to extend component life or routine change-out.

3.3. PROTECTIVE COATING AND PAINTING

N/A.

3.4. PREPARATION FOR SHIPMENT

Gaskets shall be prepared for export shipment and shall be created to provide maximum protection during shipment and extended outdoor storage.

Any gasket liable to be damaged during shipment shall be disassembled, packed separately, shipped with the unit and reassembled onsite under the supervision of Vendor 's commissioning/start-up technician.

Each crate shall be clearly identified in accordance with the customer's specification. As a minimum the crate shall be marked with the Purchase Order number, the item number, the shipping mass and the delivery address.

Gasket shall be protected against damage during transportation and erection.

The gaskets shall be suitably preserved to maintain in good condition throughout the phases of storage until ready to be operated.

All gaskets shall be suitably protected for shipment and securely anchored during transit. Separate or loose parts shall be completely boxed with identification tag.

Tools and spare parts shall be packed in metal boxes suitable for long term storage. The boxes shall be galvanized or coated in accordance with Project requirement.

3.5. GUARANTEE AND WARRANTY

The BIDDER/ MANUFACTURER shall have final and total responsibility for the design and performance of all specification for material supplied under this document.

The BIDDER/ MANUFACTURER shall replace and install without cost to the PURCHASER any materials, supplies which fails under design conditions due to defects in material or workmanship if the defect is observed and/or such failure occurs within the guarantee/warranty period. Acceptance of this order will signify acceptance of all conditions of this guarantee.

The guarantee period shall be at least 18 months from the date of delivery or 12 months from the date of operation, whichever comes first.

3.6. SPARE PARTS

3.6.1. START-UP AND COMMISSIONING SPARES

The BIDDER/ MANUFACTURER shall include, as part of his bid, a detailed, price list of start-up and commissioning spares which shall be supplied as part of the original purchase package.

3.6.2. TWO YEAR SPARES

The BIDDER/ MANUFACTURER shall include, as part of his bid, a detailed, list of recommended spare parts for two years continuous operation. These spares shall be costed for separate purchase.

3.7. CONFLICTING REQUIREMENTS

BIDDER/ MANUFACTURER shall notify PURCHASER of any conflicts between this TRD, specifications, the related data sheets, the Codes and Standards and any other specifications noted herein. Resolutions and/or interpretation precedence shall be obtained from Purchaser in writing before proceeding with the design/ manufacture.

3.8. DEVIATION LIST

BIDDER/ MANUFACTURER's quotation shall be in full conformity with PURCHASER's requirements. Unless exceptions, deviations or alternatives are clearly defined and listed on the attached PURCHASER's form "Deviation List" and submitted with BIDDER/

MANUFACTURER 's quotation, the requirements and conditions of this Requisition shall be deemed to be accepted by the BIDDER/ MANUFACTURER.

4. INSPECTION AND TESTS

Inspection and tests shall be made by the BIDDER/ MANUFACTURER in accordance with:

[X] Test & Inspection should be carried out acc. to the applicable codes, specification and standards.

[X] Maker's standard plan & procedure as approved by PURCHASER.

[X] Local regulation, if any.

The OWNER and/or PURCHASE inspector shall hold a right to be present at any manufacturing stage of the gaskets and/or materials.

Refer to Attachment #4 Vendor Data Document List for the detailed.

5. VENDOR DOCUMENT REQUIREMENT

The BIDDER/ MANUFACTURER shall fill in all required technical information for the forms in "Attachment #3 – Technical Documentation Forms". In particular, the form "Attachment #3.1 – Technical Bid Requirement Forms" is mandatory. Failure to complete this form will render the bid invalid.

The CONTRACTOR must complete the forms, documents, and drawings as listed in "Attachment #4 – Vendor Data Documents List".

6. ATTACHMENT

No.	Attachment	Document	Remark
1.	Attachment #1	Material Take Off (MTO)	
2.	Attachment #2	Technical Support Document	
3.	Attachment #3	Technical Bid Proposal	
4.	Attachment #4	Vendor Data Documents List	
5.	Attachment #5	Project Schedule	

ATTACHMENT #1

MATERIAL TAKE OFF (MTO)

PROJECT: EXPANSION OF 40,000M³ STORAGE CAPACITY AT PETEC HAI PHONG
MTO OF GASKETS (PROCESS)

No.	NAME	SPECIFICATION	SIZE 1	SIZE 2	SIZE 3	DESSCRIPTION	MATERIAL	UNIT	DES. Q.TY	SPARE	TOTAL	REMARK
1	GASKET	1A1	20	20	0	GASKET RF 3.3MM #150 SPIRAL WOUND SS304 WITH GRAPHITE COMPRESSED FILLER	FILLER: SU304 COATED PTFE IR/OR: SUS304	psc	4	100%	8	
2	GASKET	1A1	25	25	0	GASKET RF 3.3MM #150 SPIRAL WOUND SS304 WITH GRAPHITE COMPRESSED FILLER	FILLER: SU304 COATED PTFE IR/OR: SUS304	psc	12	100%	24	
3	GASKET	1A1	50	50	0	GASKET RF 3.3MM #150 SPIRAL WOUND SS304 WITH GRAPHITE COMPRESSED FILLER	FILLER: SU304 COATED PTFE IR/OR: SUS304	psc	20	100%	40	
4	GASKET	1A1	80	80	0	GASKET RF 3.3MM #150 SPIRAL WOUND SS304 WITH GRAPHITE COMPRESSED FILLER	FILLER: SU304 COATED PTFE IR/OR: SUS304	psc	5	100%	10	
5	GASKET	1A1	100	100	0	GASKET RF 3.3MM #150 SPIRAL WOUND SS304 WITH GRAPHITE COMPRESSED FILLER	FILLER: SU304 COATED PTFE IR/OR: SUS304	psc	84	100%	168	
6	GASKET	1A1	150	150	0	GASKET RF 3.3MM #150 SPIRAL WOUND SS304 WITH GRAPHITE COMPRESSED FILLER	FILLER: SU304 COATED PTFE IR/OR: SUS304	psc	69	100%	138	
7	GASKET	1A1	200	200	0	GASKET RF 3.3MM #150 SPIRAL WOUND SS304 WITH GRAPHITE COMPRESSED FILLER	FILLER: SU304 COATED PTFE IR/OR: SUS304	psc	161	100%	322	
8	GASKET	1A1	250	250	0	GASKET RF 3.3MM #150 SPIRAL WOUND SS304 WITH GRAPHITE COMPRESSED FILLER	FILLER: SU304 COATED PTFE IR/OR: SUS304	psc	52	100%	104	
9	GASKET	1A1	300	300	0	GASKET RF 3.3MM #150 SPIRAL WOUND SS304 WITH GRAPHITE COMPRESSED FILLER	FILLER: SU304 COATED PTFE IR/OR: SUS304	psc	24	100%	48	

PROJECT: EXPANSION OF 40,000M³ STORAGE CAPACITY AT PETEC HAI PHONG
MTO GASKETS (FIRE FIGHTING)

No.	NAME	SPECIFICATION	SIZE 1	SIZE 2	SIZE 3	DESSCRIPTION	MATERIAL	UNIT	DES. Q.TY	SPARE	TOTAL	REMARK
1	GASKET	1A2	15	15	0	GASKET RF 3.3MM #150 SPIRAL WOUND SS304 WITH GRAPHITE COMPRESSED FILLER	FILLER: SU304 COATED PTFE IR/OR: SUS304	psc	3	100%	6	
2	GASKET	1A2	25	25	0	GASKET RF 3.3MM #150 SPIRAL WOUND SS304 WITH GRAPHITE COMPRESSED FILLER	FILLER: SU304 COATED PTFE IR/OR: SUS304	psc	1	100%	2	
3	GASKET	1A2	50	50	0	GASKET RF 3.3MM #150 SPIRAL WOUND SS304 WITH GRAPHITE COMPRESSED FILLER	FILLER: SU304 COATED PTFE IR/OR: SUS304	psc	1	100%	2	
4	GASKET	1A2	80	80	0	GASKET RF 3.3MM #150 SPIRAL WOUND SS304 WITH GRAPHITE COMPRESSED FILLER	FILLER: SU304 COATED PTFE IR/OR: SUS304	psc	16	100%	32	
5	GASKET	1A2	100	100	0	GASKET RF 3.3MM #150 SPIRAL WOUND SS304 WITH GRAPHITE COMPRESSED FILLER	FILLER: SU304 COATED PTFE IR/OR: SUS304	psc	96	100%	192	
6	GASKET	1A2	150	150	0	GASKET RF 3.3MM #150 SPIRAL WOUND SS304 WITH GRAPHITE COMPRESSED FILLER	FILLER: SU304 COATED PTFE IR/OR: SUS304	psc	18	100%	36	
7	GASKET	1A2	200	200	0	GASKET RF 3.3MM #150 SPIRAL WOUND SS304 WITH GRAPHITE COMPRESSED FILLER	FILLER: SU304 COATED PTFE IR/OR: SUS304	psc	45	100%	90	
8	GASKET	1A2	250	250	0	GASKET RF 3.3MM #150 SPIRAL WOUND SS304 WITH GRAPHITE COMPRESSED FILLER	FILLER: SU304 COATED PTFE IR/OR: SUS304	psc	8	100%	16	
9	GASKET	1A2	300	300	0	GASKET RF 3.3MM #150 SPIRAL WOUND SS304 WITH GRAPHITE COMPRESSED FILLER	FILLER: SU304 COATED PTFE IR/OR: SUS304	psc	5	100%	10	

ATTACHMENT #2

TECHNICAL SUPPORT DOCUMENT

- *Att #2.1 Specifications*
- *Att #2.2 Drawings*

MỞ RỘNG SỨC CHỨA 40.000M3 KHO XĂNG DẦU PETEC HẢI PHÒNG
ĐẶC TÍNH KỸ THUẬT VẬT LIỆU VAN, ĐƯỜNG ỐNG VÀ PHỤ KIỆN
(PIPING MATERIAL CLASS SPECIFICATION)

Piping Class	**A1**
Material	Carbon Steel
ASME Rating	150 Lbs
Corrosion Allowance	2.0 mm

Service	DO, M95, M92, FO, E5

Max Design Pressure at Temperature						
Temperature (Deg. C)			0	38	50	65
Pressure (Barg)			19.6	19.6	19.2	18.75

Pipes ASME B36.10M	NPS	1/2"	3/4"	1"	1.1/2"	2"	3"	4"	6"	8"	10"	12"	14"
	DN	15	20	25	40	50	80	100	150	200	250	300	350
	SCH	STD											
	WT	2.77	2.87	3.38	3.68	3.91	5.49	6.02	7.11	8.18	9.27	9.53	9.53
	Material	SMLS, PE, API 5L Gr.B/ASTM A106 Gr. B				SMLS, BE, API 5L Gr.B/ASTM A106 Gr. B							
Fittings: 45^0 or 90^0 LR elbows, tees, reducing tees, caps, couplings, plug, reducing couplings, conc. and ecc. reducers	ASME B16.11	3000 Lbs SW/threaded, A105N											
	ASME B16.9					LR, WT as per pipe schedule, BW, A234 Gr. WPB							
Olets	MSS SP-97	Sockolet and Threadolet, 3000 Lbs, A105N				Welolet, WT as per pipe schedule,							
Bushings, caps & Plugs	ASME B16.11	3000 Lbs, threaded, A105N											
Nipolet Flanges	MSS/ B16.5	150 Lbs, WT as per pipe schedule, A105N											
Conc. and Ecc. Swages	MSS SP-95	PE, WT as per pipe schedule, A105N											
Pipe Nipple	ASME B36.10M	100 mm length PE / NPT, SCH 80, A106 Gr.B											
Flanges	ASME B16.5	150 Lbs, RF, S.O, A105N				S.O, 150 Lbs, RF, WT as per pipe schedule, A105N							
Orifice Flanges	ASME B16.36		S.O, 150 Lbs, RF, WT as per pipe schedule, A105N										
Blind Flanges	ASME B16.5	150 Lbs, RF, A105N											
Spect.	ASME B16.48	Spectacle blind 150 Lbs, RF, A105N											
Gaskets	ASME B16.20	Spiral wound, 150Lbs, graphite filler, 4.5 mm thickness 316 SS winding, SS inner ring and CS outer ring											
Bolting	ASME B16.5/ B1.1/ B18.2.2	Stud bolt fully threaded with two heavy hex. nuts A193 Gr. B7/ A194 Gr. 2H, Hotdip Galvanized											
Ball valves	RB or FB	Kiểu Slilt body, full bore, Trunnion ball valve, disk bolt type, Tiêu chuẩn thiết kế ASME/ANSI/ API, áp suất 10 bar, Nhiệt độ hoạt động <100°C, Kết nối Nối ren NPT (<2", #800 THRD/PUP LEVER OP) hoặc nối bích RF (≥2", #150 FLGD-RF BB), Thân van ASTM A 216 WCB , Insert ASTM A 105, BallS.S. A – 351 CF8M/Type 316L,											
Gate Valves	SW OR RF	size >=2 inch : ASME/ANSI B16.34, Kiểu van OS & Y Gate valve (van cửa ty nổi), Tiêu chuẩn API 600 (size≥2 inch), thân van ASTM A 216 WCB, Seat (Body Ring) ASTM A105+STL6, Kết nối 150# RF Flange (mặt bích), Áp lực: 10 bar. , Nhiệt độ: <100°C; size < 2 inch : Kiểu van OS & Y Gate valve (van cửa ty nổi), Tiêu chuẩn API 602 (size<2 inch), thân van ASTM A 105N, Seat (Body Ring) ASTM A105N+STL6, Kết nối #800SW, Áp lực: 10 bar , Nhiệt độ: <100°C;											
Globe valves	SW OR RF	Thân van ASTM A 216 WCB, Seats STL6, Kết nối 150# RF Flange (mặt bích), Tiêu chuẩn: ANSI, Áp lực: 10 bar, Nhiệt độ: <100°C;											
Butterfly Valves	FF	Kiểu van Lug type, Tiêu chuẩn API 609, Thân van A216-WCB, Đĩa van và trục van thép hợp kim Stainless steel, nhiệt độ làm việc <100°C, Mặt bích #150 FLGD RF, phù hợp ASME/ANSI B16.5											
Check valves	SW OR RF	>=2 inch: Tiêu chuẩn BS 1868, Thân van ASTM A 216 WCB, Kết nối 150# RF Flange (mặt bích) tiêu chuẩn ANSI B16.5 , Ap suất 10 bar, Nhiệt độ <100°C; < 2 inch: Tiêu chuẩn API 602, Thân van A105N + STL6, Kết nối #800 SW, Áp suất 10 bar, Nhiệt độ <100°C;											
Safety valve	RF	Tiêu chuẩn ASME VIII, API 520 (Part I and II), API RP- 527, API 821-00016, Kiểu van Conventional with Cap Over Adjusting Bolt, Vật liệu thân A216-WCB, Bích : 150# SO RF ASME/ANSI B16.5, nhiệt độ hoạt động <100°C; áp suất và dung sai được cài đặt theo yêu cầu thiết kế											

MỞ RỘNG SỨC CHỨA 40.000M3 KHO XĂNG DẦU PETEC HẢI PHÒNG
ĐẶC TÍNH KỸ THUẬT VẬT LIỆU VAN, ĐƯỜNG ỐNG VÀ PHỤ KIỆN
(PIPING MATERIAL CLASS SPECIFICATION)

Piping Class	**A1**
Material	Carbon Steel
ASME Rating	150 Lbs
Corrosion Allowance	2.0 mm

Service	DO, M95, M92, FO, E5

Max Design Pressure at Temperature						
Temperature (Deg. C)			0	38	50	65
Pressure (Barg)			19.6	19.6	19.2	18.75

Pipes ASME B36.10M	NPS	1/2"	3/4"	1"	1.1/2"	2"	3"	4"	6"	8"	10"	12"	14"
	DN	15	20	25	40	50	80	100	150	200	250	300	350
	SCH	STD											
	WT	2.77	2.87	3.38	3.68	3.91	5.49	6.02	7.11	8.18	9.27	9.53	9.53
	Material	SMLS, PE, API 5L Gr.B/ASTM A106 Gr. B				SMLS, BE, API 5L Gr.B/ASTM A106 Gr. B							
Fittings: 45^0 or 90^0 LR elbows, tees, reducing tees, caps, couplings, plug, reducing couplings, conc. and ecc. reducers	ASME B16.11	3000 Lbs SW/threaded, A105N											
	ASME B16.9					LR, WT as per pipe schedule, BW, A234 Gr. WPB							
Olets	MSS SP-97	Sockolet and Threadolet, 3000 Lbs, A105N				Welolet, WT as per pipe schedule,							
Bushings, caps & Plugs	ASME B16.11	3000 Lbs, threaded, A105N											
Nipolet Flanges	MSS/ B16.5	150 Lbs, WT as per pipe schedule, A105N											
Conc. and Ecc. Swages	MSS SP-95	PE, WT as per pipe schedule, A105N											
Pipe Nipple	ASME B36.10M	100 mm length PE / NPT, SCH 80, A106 Gr.B											
Flanges	ASME B16.5	150 Lbs, RF, S.O, A105N				S.O, 150 Lbs, RF, WT as per pipe schedule, A105N							
Orifice Flanges	ASME B16.36		S.O, 150 Lbs, RF, WT as per pipe schedule, A105N										
Blind Flanges	ASME B16.5	150 Lbs, RF, A105N											
Spect.	ASME B16.48	Spectacle blind 150 Lbs, RF, A105N											
Gaskets	ASME B16.20	Spiral wound, 150Lbs, graphite filler, 4.5 mm thickness 316 SS winding, SS inner ring and CS outer ring											
Bolting	ASME B16.5/ B1.1/ B18.2.2	Stud bolt fully threaded with two heavy hex. nuts A193 Gr. B7/ A194 Gr. 2H, Hotdip Galvanized											

Branch 90 Deg. Connection

HEADER SIZE	BRANCH SIZE 15	20	25	40	50	80	100	150	200	250	300	350
15	ETW											
20	RTW	ETW										
25	RTW	RTW	ETW									
40	RTW	RTW	RTW	ETW								
50	TO/ SO	TO/ SO	RT	RT	ET							
80	TO/ SO	TO/ SO	TO/ SO	RT	RT	ET						
100	TO/ SO	TO/ SO	TO/ SO	TO/SO/NF	RT	RT	ET					
150	TO/ SO	TO/ SO	TO/ SO	TO/SO/NF	WO	RT	RT	ET				
200	TO/ SO	TO/ SO	TO/ SO	TO/SO/NF	WO	WO	RT	RT	ET			
250	TO/ SO	TO/ SO	TO/ SO	TO/SO/NF	WO	WO	WO	RT	RT	ET		
300	TO/ SO	TO/ SO	TO/ SO	TO/SO/NF	WO	WO	WO	RT	RT	RT	ET	
350	TO/ SO	TO/ SO	TO/ SO	TO/SO/NF	WO	WO	WO	RT	RT	RT	RT	ET
DN	15	20	25	40	50	80	100	150	200	250	300	350

ET: Equal Tee BW
ETW: Equal Tee SW
RT: Reducing Tee BW
RTW: Reducing Tee SW
TO: Threadolet
SO: Sockolet
WO: Weldolet
NF: Nipolet Flanges

Notes:
(1) Buttweld fitings and weldneck flange to match wall thickness of pipe it is attached to
(2) Stud bolts and nuts shall be Hot-dip galvanize
(3) The use of reduced bore ball valves is preferred; use full bore ball valves only when necessary for process/ operating requirements
(4) All threaded joints shall be NPT to ASME B1.20.1

MỞ RỘNG SỨC CHỨA 40.000M3 KHO XĂNG DẦU PETEC HẢI PHÒNG
ĐẶC TÍNH KỸ THUẬT VẬT LIỆU VAN, ĐƯỜNG ỐNG VÀ PHỤ KIỆN
(PIPING MATERIAL CLASS SPECIFICATION)

Piping Class	**A2**
Material	Carbon Steel
ASME Rating	150 Lbs
Corrosion Allowance	2.0 mm

Service	FF,FW

Max Design Pressure at Temperature						
Temperature (Deg. C)			0	38	50	65
Pressure (Barg)			19.6	19.6	19.2	18.75

Pipes ASME B36.10M	NPS	1/2"	3/4"	1"	1.1/2"	2"	3"	4"	6"	8"	10"	12"	14"
	DN	15	20	25	40	50	80	100	150	200	250	300	350
	SCH	STD											
	WT	2.77	2.87	3.38	3.68	3.91	5.49	6.02	7.11	8.18	9.27	9.53	9.53
	Material	SMLS, PE, ASTM A53 Gr. B				SMLS, BE, ASTM A53 Gr. B							
Fittings: 45^0 or 90^0 LR elbows, tees, reducing tees, caps, couplings, plug, reducing couplings, conc. and ecc. reducers	ASME B16.11	3000 Lbs SW/threaded, A105N											
	ASME B16.9					LR, WT as per pipe schedule, BW, A234 Gr. WPB GALV.							
Olets	MSS SP-97	Sockolet and Threadolet, 3000 Lbs, A105N				Welolet, WT as per pipe schedule, BW, A105N							
Bushings, caps & Plugs	ASME B16.11	3000 Lbs, threaded, A105N											
Nipolet Flanges	MSS/ B16.5	150 Lbs, WT as per pipe schedule, A105N .											
Conc. and Ecc. Swages	MSS SP-95	PE, WT as per pipe schedule, A105N.											
Pipe Nipple	ASME B36.10M	100 mm length PE / NPT, SCH 80, A53 Gr.B GALV.											
Flanges	ASME B16.5	150 Lbs, RF, S.O, A105N				S.O, 150 Lbs, RF, WT as per pipe schedule, A105N							
Orifice Flanges	ASME B16.36		S.O, 150 Lbs, RF, WT as per pipe schedule, A105N										
Blind Flanges	ASME B16.5	150 Lbs, RF, A105N											
Spect.	ASME B16.48	Spectacle blind 150 Lbs, RF, A105N											
Gaskets	ASME B16.20	Spiral wound, 150Lbs, graphite filler, 4.5 mm thickness 316 SS winding, SS inner ring and CS outer ring											
Bolting	ASME B16.5/ B1.1/ B18.2.2	Stud bolt fully threaded with two heavy hex. nuts A193 Gr. B7/ A194 Gr. 2H, Hotdip Galvanized											
Ball valves	RB or FB	Kiểu Slilt body, full bore, Trunnion ball valve, disk bolt type, Tiêu chuẩn thiết kế ASME/ANSI/ API, áp suất 10 bar, Nhiệt độ hoạt động <100°C, Kết nối Nối ren NPT (<2", #800 THRD/PUP LEVER OP) hoặc nối bích RF (≥2", #150 FLGD-RF BB), Thân van ASTM A 216 WCB , Insert ASTM A 105, BallS.S. A – 351 CF8M/Type 316L,											
Gate Valves	SW OR RF	size >=2 inch : ASME/ANSI B16.34, Kiểu van OS & Y Gate valve (van cửa ty nổi), Tiêu chuẩn API 600 (size≥2 inch), thân van ASTM A 216 WCB, Seat (Body Ring) ASTM A105+STL6, Kết nối 150# RF Flange (mặt bích), Áp lực: 10 bar. , Nhiệt độ: <100°C; size < 2 inch : Kiểu van OS & Y Gate valve (van cửa ty nổi), Tiêu chuẩn API 602 (size<2 inch), thân van ASTM A 105N, Seat (Body Ring) ASTM A105N+STL6, Kết nối #800SW, Áp lực: 10 bar , Nhiệt độ: <100°C;											
Globe valves	SW OR RF	Thân van ASTM A 216 WCB, Seats STL6, Kết nối 150# RF Flange (mặt bích), Tiêu chuẩn: ANSI, Áp lực: 10 bar, Nhiệt độ: <100°C;											
Butterfly Valves	FF	Kiểu van Lug type, Tiêu chuẩn API 609, Thân van A216-WCB, Đĩa van và trục van thép hợp kim Stainless steel, nhiệt độ làm việc <100°C, Mặt bích #150 FLGD RF, phù hợp ASME/ANSI B16.5											
Check valves	SW OR RF	>=2 inch: Tiêu chuẩn BS 1868, Thân van ASTM A 216 WCB, Kết nối 150# RF Flange (mặt bích) tiêu chuẩn ANSI B16.5 , Ap suất 10 bar, Nhiệt độ <100°C; < 2 inch: Tiêu chuẩn API 602, Thân van A105N + STL6, Kết nối #800 SW, Áp suất 10 bar, Nhiệt độ <100°C;											
Safety valve	RF	Tiêu chuẩn ASME VIII, API 520 (Part I and II), API RP- 527, API 821-00016, Kiểu van Conventional with Cap Over Adjusting Bolt, Vật liệu thân A216-WCB, Bích : 150# SO RF ASME/ANSI B16.5, nhiệt độ hoạt động <100°C; áp suất và dung sai được cài đặt theo yêu cầu thiết kế											

MỞ RỘNG SỨC CHỨA 40.000M3 KHO XĂNG DẦU PETEC HẢI PHÒNG
ĐẶC TÍNH KỸ THUẬT VẬT LIỆU VAN, ĐƯỜNG ỐNG VÀ PHỤ KIỆN
(PIPING MATERIAL CLASS SPECIFICATION)

Piping Class	**A2**
Material	Carbon Steel
ASME Rating	150 Lbs
Corrosion Allowance	2.0 mm

Service	FF,FW

Max Design Pressure at Temperature						
Temperature (Deg. C)			0	38	50	65
Pressure (Barg)			19.6	19.6	19.2	18.75

Pipes ASME B36.10M	NPS	1/2"	3/4"	1"	1.1/2"	2"	3"	4"	6"	8"	10"	12"	14"
	DN	15	20	25	40	50	80	100	150	200	250	300	350
	SCH	STD											
	WT	2.77	2.87	3.38	3.68	3.91	5.49	6.02	7.11	8.18	9.27	9.53	9.53
	Material	SMLS, PE, ASTM A53 Gr. B				SMLS, BE, ASTM A53 Gr. B							
Fittings: 45^0 or 90^0 LR elbows, tees, reducing tees, caps, couplings, plug, reducing couplings, conc. and ecc. reducers	ASME B16.11	3000 Lbs SW/threaded, A105N											
	ASME B16.9					LR, WT as per pipe schedule, BW, A234 Gr. WPB GALV.							
Olets	MSS SP-97	Sockolet and Threadolet, 3000 Lbs, A105N				Welolet, WT as per pipe schedule, BW, A105N							
Bushings, caps & Plugs	ASME B16.11	3000 Lbs, threaded, A105N											
Nipolet Flanges	MSS/ B16.5	150 Lbs, WT as per pipe schedule, A105N .											
Conc. and Ecc. Swages	MSS SP-95	PE, WT as per pipe schedule, A105N.											
Pipe Nipple	ASME B36.10M	100 mm length PE / NPT, SCH 80, A53 Gr.B GALV.											
Flanges	ASME B16.5	150 Lbs, RF, S.O, A105N				S.O, 150 Lbs, RF, WT as per pipe schedule, A105N							
Orifice Flanges	ASME B16.36		S.O, 150 Lbs, RF, WT as per pipe schedule, A105N										
Blind Flanges	ASME B16.5	150 Lbs, RF, A105N											
Spect.	ASME B16.48	Spectacle blind 150 Lbs, RF, A105N											
Gaskets	ASME B16.20	Spiral wound, 150Lbs, graphite filler, 4.5 mm thickness 316 SS winding, SS inner ring and CS outer ring											
Bolting	ASME B16.5/ B1.1/ B18.2.2	Stud bolt fully threaded with two heavy hex. nuts A193 Gr. B7/ A194 Gr. 2H, Hotdip Galvanized											

Branch 90 Deg. Connection

HEADER SIZE	BRANCH SIZE											
15	ETW											
20	RTW	ETW										
25	RTW	RTW	ETW									
40	RTW	RTW	RTW	ETW								
50	TO/ SO	TO/ SO	RT	RT	ET							
80	TO/ SO	TO/ SO	TO/ SO	RT	RT	ET						
100	TO/ SO	TO/ SO	TO/ SO	TO/SO/NF	RT	RT	ET					
150	TO/ SO	TO/ SO	TO/ SO	TO/SO/NF	WO	RT	RT	ET				
200	TO/ SO	TO/ SO	TO/ SO	TO/SO/NF	WO	WO	RT	RT	ET			
250	TO/ SO	TO/ SO	TO/ SO	TO/SO/NF	WO	WO	WO	RT	RT	ET		
300	TO/ SO	TO/ SO	TO/ SO	TO/SO/NF	WO	WO	WO	RT	RT	RT	ET	
350	TO/ SO	TO/ SO	TO/ SO	TO/SO/NF	WO	WO	WO	RT	RT	RT	RT	ET
DN	15	20	25	40	50	80	100	150	200	250	300	350

ET: Equal Tee BW
ETW: Equal Tee SW
RT: Reducing Tee BW
RTW: Reducing Tee SW
TO: Threadolet
SO: Sockolet
WO: Weldolet
NF: Nipolet Flanges

Notes:
(1) Buttweld fitings and weldneck flange to match wall thickness of pipe it is attached to
(2) Stud bolts and nuts shall be Hot-dip galvanize
(3) The use of reduced bore ball valves is preferred; use full bore ball valves only when necessary for process/ operating requirements
(4) All threaded joints shall be NPT to ASME B1.20.1

ATTACHMENT #3

TECHNICAL BID PROPOSAL

- *Att #3.1 Technical Bid Requirement forms*
- *Att #3.2 Technical forms*
- *Att #3.3 Technical Bid Clarification form*

VENDOR DATA DOCUMENTS LIST (VDRL)

No.	Description	With Bid	Final	Remark
1	Company Profile Brochure		**x**	
2	Material Data Sheet			
3	General Arrangement Drawings			
4	Fabrication Drawings			
5	Performance & Test Procedure			
6	FAT Reports			
7	Inspection & Test Plan		x	
8	Material Mill Test Certificate		x	follow EN10204, Type 3.1
9	Installation, Operation & Maintenance Manual			
10	Vendor Data Index & Schedule		x	
11	Preservation Procedure		x	
12	Packing List		x	
13	Fumigation Certificate		x	
14	Certificate of Compliance (CoC)		x	
15	Test Certificate		x	
16	Insurance Certificate		x	
17	Commercial Invoice		x	
18	Bill of Lading		x	
19	Import Declaration		x	
20	Import License (if required)		x	

INSPECTION AND TEST PLAN

R: Review SW: Spot Witness W: Witness H: Hold point

No.	Inspection Item	Inspection Involvement		
		PURCHASER	OWNER	3rd Party Inspection
1	Material certificates	R	R	R
2	CO/CQ	R	R	-
3	Material identification	SW	R	R
4	Balancing Test (impeller)	-	-	-
5	Heat Treatment	-	-	-
6	PMI (where applicable)	R	R	-
7	Hydrostatic Testy - Casing, Cooing Jacket	-	-	-
8	Helium leak Test (if required)	-	-	-
9	Dimensional check and visual inspection	W	SW	W
10	N.D.E (***)	-	-	-
11	NPSH Test (if required)	-	-	-
12	Mechanical running test (*) - Noise, Vibration, Temp. rising check, RPM, etc.	-	-	-
13	Performance Test (*) - Capacity, Head, BHP, Efficiency	-	-	-
14	Dismantling inspection (where required)	-	-	-
15	Motor Inspection (**)	-	-	-
16	Internal cleaning inspection	W	W	-
17	Component and Accessories inspection	SW	R	-
18	Final assembly inspection	SW	R	-
19	Rust prevention check and painting inspection	SW	R	R
20	Shipping preparation inspection	SW	R	-
21	Certificate of Completion and Final vendor inspection report review	R	R	R

Notes:

(*) One pump per each identical pump.
(All pumps will be witness tested for critical & big size pump)

(**) Electric Motor inspection detail shall be indentified later

(***) NDE shall be done after 24hrs from welding work and 48hrs from PWHT

ATTACHMENT #5

PROJECT SCHEDULE