



**NUMALIGARH REFINERY EXPANSION
PROJECT**





EOI Ref No: EOI/TP/082176C/NRL/PQ/219 Dated 15-05-2026

ITEM: FLANGES-V

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**INVITE FOR
EXPRESS OF INTEREST (EOI)
FOR
SUPPLY OF FLANGES - V**

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EOI FOR SUPPLY OF FLANGES

Ladies & Gentlemen,

NUMALIGARH REFINERY LIMITED (NRL) has awarded M/s. Technip Energies India Limited (T.EN) for Project Management Consultancy services (Managing PMC) to provide PMC/MPMC services for BDEP preparation for Open Art units, FEED for Licensed Process units , Tendering & Award of EPC / LSTK contracts for identified process units in EPC mode , Detailed Engineering, Procurement & Expediting services for units identified as MPMC/ Conventional mode, interface management for EPCM-1/EPCM-2/BOO contractors to be engaged by NRL, Construction Management & Supervision, Assistance in start-up, Commissioning & performance test runs for Numaligarh Refinery Expansion Project (NREP) from 3 to 9 MMTPA of its Refinery in Numaligarh, Golaghat District, Assam, India.

On behalf of OWNER (NRL), M/s. Technip Energies India Limited (T.EN) as MPMC Consultant invites Expression of Interest (EOI) for Supply of Flanges-V. Interested bidders are requested to revert on this EOI within stipulated time period given herein with the EOI by submitting duly filled, Signed and Stamped Annexure-1.

The scope of work and details of credentials to be submitted are as follows:

Sr No	Description	Tender Requirement
1.	Type Of EOI	Domestic Limited
2	Name Of Work	Supply of Flanges-V
3	Scope of Supply	The scope covers (but not limited to) Manufacturing, procurement of materials and bought out components, assembly at shop, Inspection including inspection by TPIA, Testing at manufacturer's works, packing and supply as per material requisition attached with this EOI on DAP Site basis for NRL Offsites & Utilities Project at NRL, Numaligarh, Golaghat District, Assam



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4	Due date for submission of EOI	25-05-2026 up to 15.00 Hrs (IST).
5	EOI opening date & time	26-05-2026 @10.00 Hrs. (IST)
6	Delivery Requirement	<p>Delivery shall be on DAP Site Basis.</p> <p>Bidder to Confirm delivery requirement for individual line items in Annexure-II (BOM)</p> <p>The delivery period quoted / agreed in EOI shall be strictly followed. <u>Despatch shall be on Express Cargo Services.</u></p> <p>Note: Delivery requirement is very critical from project progress point of view. Non-compliance to delivery requirement will reject the EOI and bidder shall not be considered for issuance of tender.</p>
7	EPCG	Not Applicable
8	Basis of evaluation	<p>Shall be decided based on the bidder's responses to this EOI.</p> <p>Evaluation Methodology (Lotwise basis) for firm tender shall be decided based on bidder's response against this EOI,</p> <p>The basis of evaluation shall be mentioned clearly in the Firm Tender.</p>
9	Part Order	Part order shall not be applicable. Bidder submitting EOI for partial items / Quantity shall be rejected and shall not be considered for issuance of tender.
10	Price Reduction Scheule (PRS)	In case of delay in execution of the order, NRL may at its option, recover from the vendor price reduction of 0.5% of the value of delayed goods per day of delay or part thereof subject to a maximum of 5% of the undelivered order value of goods. LR date / Express Cargo date will be considered as delivery completion date for calculation of price reduction.
11	Special Instruction for firm Tender	a) Tender shall be issued as "No Deviation Tender" thru CPP Portal with bid due date of Three (3)



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		Working Days from tender published date for uploading of technical and commercial bids. b) No Bid due date extension shall be provided
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1. OBLIGATIONS AND LIABILITIES

- ♣ Participation in this Call for Bids does not guarantee any future business, or inclusion in future solicitations
- ♣ The present Call for Bid does not create contractual relations of any kind or commitment from TECHNIP ENERGIES / NRL to award or enter into any contract.

INSTRUCTION AND GUIDELINES FOR SUBMISSION OF APPLICATION / EOI

- a. EOI for Empanelment document can be downloaded from website at ***<http://eprocure.gov.in/eprocure/app>***.
- b. The EOI documents shall be submitted only as per the enclosed format(s) along with all Annexures. Self-attested documentary proof(s) in respect of the details furnished in the EOI form shall be submitted along with the application.
- c. The EOI shall be signed by the authorized person (s) of the firm.
- d. The EOI shall be in English language only. Applicant shall provide certified English translations of any documents forming part of the EOI which are not originally in English language, in which case, for the purpose of interpretation of the EOI, the English translation shall govern.
- e. The applicant is responsible for all the expenses, costs incurred towards preparation of the EOI, in connection therewith. NRL shall, in no case, be responsible or liable for any such cost, whatsoever, regardless of the outcome of the EOI shortlisting process or its abandonment by NRL.
- f. Amendments/ Corrigendum if any shall be published only in CPP Portal website ***<http://eprocure.gov.in/eprocure/app>***. Vendors are requested to keep on visiting the CPP Portal website for amendments/ corrigendum.
- g. NRL reserves the right to reject any or all Applications received and/ or any Applicant, at their discretion without assigning any reason whatsoever.
- h. Interested bidders shall upload shall upload EOI on CPP Portal website ***<http://eprocure.gov.in/eprocure/app>*** within the due date and time mentioned above
- i. NRL/MPMC reserves the right to ask for additional documents and details, if need



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arises.

- j. NRL/MPMC is not responsible for any EOI not getting uploaded on CPP Portal in time.
- k. It shall be sole prerogative/ decision of NRL for utilizing / not utilizing the information gathered from EOI.
- l. NRL/MPMC is not bound to assess any or all the responses to the EOIs and also reserves the right to take / not to take any further action.
- m. Please Note: This is not a Tender / Request for Quotation and prices are not to be submitted with, 'Expression of Interest'

n. The contact details for this EOI is

Name: Mr, Sekar Hirudhayam

Designation: Chief Manager

Email: sekar.hirudhayam@ten.com

Mobile No: +91 74002 79099

Yours faithfully,

For and on behalf of Technip Energies India Limited,

Sekar Hirudhayam

Chief Manager – Procurement

ANNEXURES:

- ANNEXURE – 1 CONFIRMATION OF INTEREST LETTER TO TECHNIP ENERGIES
- ANNEXURE-2 BILL OF MATERIALS (BOM)
- ANNEXURE-3 - SPECIFICATION



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ANNEXURE-1

CONFIRMATION OF INTEREST LETTER TO TECHNIP ENERGIES

Dear Sir,

(Please select your interest by ticking the box accordingly)

We confirm our participation with TECHNIP ENERGIES for this EOI

We decline our participation with TECHNIP ENERGIES for this EOI

If decline to participate, kindly specify reasons:

Thanking you,

**Yours faithfully
(Authorized Signatory with
company stamp)**

ANNEXURE-2

EOI Ref No: TP/082176C/NRL/PQ/219

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BILL OF MATERIAL (BOM)

SR NO	Item Code	Size 1 (Inch)	WT1	Item Description	QUANTIT Y	UOM	Items available in Ex-Stock (Yes/No) (A)	Shortest Possible Delivery confirmation by Bidder (in Weeks) from the date of LOA (DAP Site basis) (B)
4.171 FLANGE - CARBON STEEL								
1	C1LCZ5JT	0.75		Blind Flange, ASME B16.5, ASTM A105N + Sour Service + HIC Test, 150 Lbs, RF, -, -, -,	7	PCS		
2	C1LCZ5K8	4		Blind Flange, ASME B16.5, ASTM A105N + Sour Service + HIC Test, 150 Lbs, RF, -, -, -,	2	PCS		
3	C570A8LY	0.5		Blind Flange, ASME B16.5, ASTM A105N + Sour Service, 150 Lbs, RF, -, -, Caustic Service	30	PCS		
4	C570A8LZ	0.75		Blind Flange, ASME B16.5, ASTM A105N + Sour Service, 150 Lbs, RF, -, -, Caustic Service	30	PCS		
5	C570A8MD	3		Blind Flange, ASME B16.5, ASTM A105N + Sour Service, 150 Lbs, RF, -, -, Caustic Service	2	PCS		
6	C570A8MH	6		Blind Flange, ASME B16.5, ASTM A105N + Sour Service, 150 Lbs, RF, -, -, Caustic Service	2	PCS		
7	C5GN6ZU	0.75		Blind Flange, ASME B16.5, ASTM A105N + Sour Service, 300 Lbs, RF, -, -, -,	24	PCS		
8	C571DYB6	0.5		Blind Flange, ASME B16.5, ASTM A105N + Sour Service, 300 Lbs, RF, -, -, Caustic Service	64	PCS		
9	C571DYB7	0.75		Blind Flange, ASME B16.5, ASTM A105N + Sour Service, 300 Lbs, RF, -, -, Caustic Service	13	PCS		
10	C53P74UT	12		Blind Flange, ASME B16.5, ASTM A105N Epoxy Lined, 150 Lbs, FF, -, -, Lining shall be done for wetted portion only	4	PCS		
11	C53GY748	16		Blind Flange, ASME B16.5, ASTM A105N Epoxy Lined, 150 Lbs, FF, -, -, Lining shall be done for wetted portion only, Epoxy shall be Amine-cured, Potable water service	2	PCS		

SR NO	Item Code	Size 1 (Inch)	WT1	Item Description	QUANTIT Y	UOM	Items available in Ex-Stock (Yes/No) (A)	Shortest Possible Delivery confirmation by Bidder (in Weeks) from the date of LOA (DAP Site basis) (B)
12	C1VN5VW8	0.5		Blind Flange, ASME B16.5, ASTM A105N Galv. as per ASTM A153, 150 Lbs, FF, -, -, -, -	120	PCS		
13	CX5NPSJ	0.75		Blind Flange, ASME B16.5, ASTM A105N Galv. as per ASTM A153, 150 Lbs, FF, -, -, -, -	109	PCS		
14	CFG6WM5S	0.5		Blind Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF, -, -, -, -	10	PCS		
15	CFG6WM5T	0.75		Blind Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF, -, -, -, -	232	PCS		
16	CFG6WM5U	1		Blind Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF, -, -, -, -	17	PCS		
17	CFG6WM62	2		Blind Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF, -, -, -, -	16	PCS		
18	CFG6WM66	3		Blind Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF, -, -, -, -	3	PCS		
19	CFG6WM5Y	12		Blind Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF, -, -, -, -	3	PCS		
20	CFG6WM61	18		Blind Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF, -, -, -, -	2	PCS		
21	C4E77D61	0.75		Blind Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF, -, -, IBR	56	PCS		
22	C4E77D62	1		Blind Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF, -, -, IBR	4	PCS		
23	CFG6WM6Y	0.75		Blind Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF, -, -, -, -	131	PCS		
24	CFG6WM77	2		Blind Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF, -, -, -, -	7	PCS		
25	CFG6WM73	12		Blind Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF, -, -, -, -	2	PCS		

SR NO	Item Code	Size 1 (Inch)	WT1	Item Description	QUANTIT Y	UOM	Items available in Ex-Stock (Yes/No) (A)	Shortest Possible Delivery confirmation by Bidder (in Weeks) from the date of LOA (DAP Site basis) (B)
26	C4RWGTN4	0.75		Blind Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF, -, -, Hydrogen Service	23	PCS		
27	C4RWGTND	2		Blind Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF, -, -, Hydrogen Service	2	PCS		
28	C4E7ZFY9	0.75		Blind Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF, -, -, IBR	9	PCS		
29	C4EF8C6H	0.75		Blind Flange, ASME B16.5, ASTM A105N, 600 Lbs, RF, -, -, IBR	4	PCS		
30	C6ANPP39	1.5		Drip Ring, Mnf Std, ASTM A516N Gr.60 + Sour Service, Between RF Flanges, match between flanges as per ASME B16.5, -, 300 Lbs, 2 Holes 0.5 in NPTF End, -, -, -, Caustic Service	10	PCS		
31	C6ANPP3A	2		Drip Ring, Mnf Std, ASTM A516N Gr.60 + Sour Service, Between RF Flanges, match between flanges as per ASME B16.5, -, 300 Lbs, 2 Holes 0.5 in NPTF End, -, -, -, Caustic Service	29	PCS		
32	C5HCXMCH	1.5		Drip Ring, Mnf Std, ASTM A516N Gr.60, Between RF Flanges, match between flanges as per ASME B16.5, -, 300 Lbs, 2 Holes 0.5 in NPTF End, -, -, -, -,	15	PCS		
33	C5HCXMCJ	2		Drip Ring, Mnf Std, ASTM A516N Gr.60, Between RF Flanges, match between flanges as per ASME B16.5, -, 300 Lbs, 2 Holes 0.5 in NPTF End, -, -, -, -,	33	PCS		
34	C570A8MY	1.5	S-160	Long weldneck Flange, L=200mm, ASME B16.5, ASTM A105N + Sour Service, RF/BW End, -, 300 Lbs, -, Caustic Service	8	PCS		
35	C1GW6H16	1.5	S-XS	Long weldneck Flange, L=200mm, ASME B16.5, ASTM A105N, RF/BW End, -, 300 Lbs, -, -,	5	PCS		
36	C4E77D7T	1.5	S-XS	Long weldneck Flange, L=200mm, ASME B16.5, ASTM A105N, RF/BW End, -, 300 Lbs, -, IBR	2	PCS		

SR NO	Item Code	Size 1 (Inch)	WT1	Item Description	QUANTIT Y	UOM	Items available in Ex-Stock (Yes/No) (A)	Shortest Possible Delivery confirmation by Bidder (in Weeks) from the date of LOA (DAP Site basis) (B)
37	CAHRNZBU	10		Paddle Blind & Spacer, ASME B16.48, ASTM A516N Gr.60 Epoxy Lined, Between FF Flanges, as per ASME B16.5, -, 150 Lbs, With Jack Screw A193 Gr.B7, Galv., -, Lining shall be done for wetted portion only, Epoxy shall be Amine-cured, Potable water service	7	PCS		
38	C528GE0D	10		Paddle Blind & Spacer, ASME B16.48, ASTM A516N Gr.60, Between RF Flanges, as per ASME B16.5, -, 150 Lbs, With Jack Screw A193 Gr.B7, -, -, -,	9	PCS		
39	C528GE0E	12		Paddle Blind & Spacer, ASME B16.48, ASTM A516N Gr.60, Between RF Flanges, as per ASME B16.5, -, 150 Lbs, With Jack Screw A193 Gr.B7, -, -, -,	2	PCS		
40	C53HWNC5	20		Paddle Blind & Spacer, ASME B16.48, ASTM A516N Gr.60, Between RF Flanges, as per ASME B16.5, -, 150 Lbs, With Jack Screw A193 Gr.B7, -, -, IBR	2	PCS		
41	C5X9HCDP	12		Paddle Blind & Spacer, ASME B16.48, ASTM A516N Gr.60, Between RF Flanges, as per ASME B16.5, -, 600 Lbs, With Jack Screw A193 Gr.B7, -, -, -,	2	PCS		
42	CFG6WHYE	0.5	S-160	Socketweld Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF/SW End, -, -, -,	31	PCS		
43	CFLG9MT	0.5	S-XXS	Socketweld Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF/SW End, -, -, -,	2	PCS		
44	C4EN1TG8	0.75	3.2MM	Socketweld Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF/SW End, -, -, -,	16	PCS		
45	CFG70G7Y	0.75	S-XS	Socketweld Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF/SW End, -, -, -,	228	PCS		

SR NO	Item Code	Size 1 (Inch)	WT1	Item Description	QUANTIT Y	UOM	Items available in Ex-Stock (Yes/No) (A)	Shortest Possible Delivery confirmation by Bidder (in Weeks) from the date of LOA (DAP Site basis) (B)
46	C4EN1TG9	1	4MM	Socketweld Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF/SW End, -, -, -	50	PCS		
47	CFG70G8J	1	S-XS	Socketweld Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF/SW End, -, -, -	70	PCS		
48	C4E77AJE	0.75	S-XS	Socketweld Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF/SW End, -, -, IBR	64	PCS		
49	C4E77AK2	1	S-XS	Socketweld Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF/SW End, -, -, IBR	6	PCS		
50	CFG6WK8K	0.5	S-160	Socketweld Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/SW End, -, -, -	13	PCS		
51	CFD4U34	0.75	S-XXS	Socketweld Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/SW End, -, -, -	20	PCS		
52	CFG70GLP	0.75	S-XS	Socketweld Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/SW End, -, -, -	144	PCS		
53	C4EN1TRZ	1.5	4MM	Socketweld Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/SW End, -, -, -	3	PCS		
54	CFG70GNH	1.5	S-XS	Socketweld Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/SW End, -, -, -	16	PCS		
55	C4RWGSY8	0.75	S-XS	Socketweld Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/SW End, -, -, Hydrogen Service	23	PCS		
56	C4E77BK6	0.5	S-160	Socketweld Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/SW End, -, -, IBR	100	PCS		
57	C4E77BL5	0.75	S-XS	Socketweld Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/SW End, -, -, IBR	36	PCS		
58	C4E77BLU	1	S-XS	Socketweld Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/SW End, -, -, IBR	2	PCS		

SR NO	Item Code	Size 1 (Inch)	WT1	Item Description	QUANTIT Y	UOM	Items available in Ex-Stock (Yes/No) (A)	Shortest Possible Delivery confirmation by Bidder (in Weeks) from the date of LOA (DAP Site basis) (B)
59	C5N6TH54	0.75		Spectacle Blind Fig.8, ASME B16.48, ASTM A516N Gr.60 + Sour Service, Between RF Flanges, as per ASME B16.5, -, 150 Lbs, -, -, -, C.A. = 4.8 mm	2	PCS		
60	C570A8NA	0.75		Spectacle Blind Fig.8, ASME B16.48, ASTM A516N Gr.60 + Sour Service, Between RF Flanges, as per ASME B16.5, -, 150 Lbs, -, -, -, Caustic Service	5	PCS		
61	C5N7X6UH	3		Spectacle Blind Fig.8, ASME B16.48, ASTM A516N Gr.60 + Sour Service, Between RF Flanges, as per ASME B16.5, -, 300 Lbs, With Jack Screw A193 Gr.B7M, -, -, C.A. = 6.35 mm	3	PCS		
62	CAHRNZBS	6		Spectacle Blind Fig.8, ASME B16.48, ASTM A516N Gr.60 Epoxy Lined, Between FF Flanges, as per ASME B16.5, -, 150 Lbs, With Jack Screw A193 Gr.B7, Galv., -, Lining shall be done for wetted portion only, Epoxy shall be Amine-cured, Potable water service	4	PCS		
63	CAHRNZBT	8		Spectacle Blind Fig.8, ASME B16.48, ASTM A516N Gr.60 Epoxy Lined, Between FF Flanges, as per ASME B16.5, -, 150 Lbs, With Jack Screw A193 Gr.B7, Galv., -, Lining shall be done for wetted portion only, Epoxy shall be Amine-cured, Potable water service	5	PCS		
64	C5N32UUG	1		Spectacle Blind Fig.8, ASME B16.48, ASTM A516N Gr.60 Galv. as per ASTM A153, Between FF Flanges, as per ASME B16.5, -, 150 Lbs, -, -, -, -,	3	PCS		
65	C5N32UUK	2		Spectacle Blind Fig.8, ASME B16.48, ASTM A516N Gr.60 Galv. as per ASTM A153, Between FF Flanges, as per ASME B16.5, -, 150 Lbs, -, -, -, -,	3	PCS		
66	CBER7NGF	4		Spectacle Blind Fig.8, ASME B16.48, ASTM A516N Gr.60 Galv. as per ASTM A153, Between FF Flanges, as per ASME B16.5, -, 150 Lbs, With Jack Screw A193 Gr.B7, Galv., -, -,	7	PCS		
67	C4DKF39B	0.75		Spectacle Blind Fig.8, ASME B16.48, ASTM A516N Gr.60, Between RF Flanges, as per ASME B16.5, -, 150 Lbs, -, -, -, -,	12	PCS		

SR NO	Item Code	Size 1 (Inch)	WT1	Item Description	QUANTIT Y	UOM	Items available in Ex-Stock (Yes/No) (A)	Shortest Possible Delivery confirmation by Bidder (in Weeks) from the date of LOA (DAP Site basis) (B)
68	C4E77DTF	1		Spectacle Blind Fig.8, ASME B16.48, ASTM A516N Gr.60, Between RF Flanges, as per ASME B16.5, -, 150 Lbs, -, -, -, IBR	2	PCS		
69	C4E77DTJ	2		Spectacle Blind Fig.8, ASME B16.48, ASTM A516N Gr.60, Between RF Flanges, as per ASME B16.5, -, 150 Lbs, -, -, -, IBR	2	PCS		
70	C5N5PU5B	3		Spectacle Blind Fig.8, ASME B16.48, ASTM A516N Gr.60, Between RF Flanges, as per ASME B16.5, -, 150 Lbs, With Jack Screw A193 Gr.B7, -, -, IBR	2	PCS		
71	C4E7HLUY	0.75		Spectacle Blind Fig.8, ASME B16.48, ASTM A516N Gr.60, Between RF Flanges, as per ASME B16.5, -, 300 Lbs, -, -, -, ,	2	PCS		
72	C4E7ZGJ5	1		Spectacle Blind Fig.8, ASME B16.48, ASTM A516N Gr.60, Between RF Flanges, as per ASME B16.5, -, 300 Lbs, -, -, -, IBR	2	PCS		
73	C5N7CRKP	3		Spectacle Blind Fig.8, ASME B16.48, ASTM A516N Gr.60, Between RF Flanges, as per ASME B16.5, -, 300 Lbs, With Jack Screw A193 Gr.B7, -, -, ,	3	PCS		
74	C5N7CRKV	8		Spectacle Blind Fig.8, ASME B16.48, ASTM A516N Gr.60, Between RF Flanges, as per ASME B16.5, -, 300 Lbs, With Jack Screw A193 Gr.B7, -, -, ,	18	PCS		
75	C4E8T245	0.75		Spectacle Blind Fig.8, ASME B16.48, ASTM A516N Gr.60, Between RF Flanges, as per ASME B16.5, -, 600 Lbs, -, -, -, ,	2	PCS		
76	C16EZWBW	0.5		Threaded Flange, ASME B16.5, ASTM A105N Galv. as per ASTM A153, 150 Lbs, FF/NPTF End, -, -, ,	76	PCS		
77	CX5NPS4	0.75		Threaded Flange, ASME B16.5, ASTM A105N Galv. as per ASTM A153, 150 Lbs, FF/NPTF End, -, -, ,	102	PCS		
78	CX5NPS5	1		Threaded Flange, ASME B16.5, ASTM A105N Galv. as per ASTM A153, 150 Lbs, FF/NPTF End, -, -, ,	6	PCS		

SR NO	Item Code	Size 1 (Inch)	WT1	Item Description	QUANTIT Y	UOM	Items available in Ex-Stock (Yes/No) (A)	Shortest Possible Delivery confirmation by Bidder (in Weeks) from the date of LOA (DAP Site basis) (B)
79	CX5NPS8	2		Threaded Flange, ASME B16.5, ASTM A105N Galv. as per ASTM A153, 150 Lbs, FF/NPTF End, -, -, -	48	PCS		
80	CX5NPSA	3		Threaded Flange, ASME B16.5, ASTM A105N Galv. as per ASTM A153, 150 Lbs, FF/NPTF End, -, -, -	120	PCS		
81	C1DR2JL	0.75		Threaded Flange, ASME B16.5, ASTM A105N Galv. as per ASTM A153, 150 Lbs, RF/NPTF End, -, -, -	4	PCS		
82	C1DR2JM	1		Threaded Flange, ASME B16.5, ASTM A105N Galv. as per ASTM A153, 150 Lbs, RF/NPTF End, -, -, -	3	PCS		
83	C1DR2JP	1.5		Threaded Flange, ASME B16.5, ASTM A105N Galv. as per ASTM A153, 150 Lbs, RF/NPTF End, -, -, -	5	PCS		
84	C1DR2JR	2		Threaded Flange, ASME B16.5, ASTM A105N Galv. as per ASTM A153, 150 Lbs, RF/NPTF End, -, -, -	6	PCS		
85	C1DR2JT	3		Threaded Flange, ASME B16.5, ASTM A105N Galv. as per ASTM A153, 150 Lbs, RF/NPTF End, -, -, -	14	PCS		
86	C1VN5VW2	0.75		Threaded Flange, ASME B16.5, ASTM A105N Galv. as per ASTM A153, 300 Lbs, FF/NPTF End, -, -, -	2	PCS		
87	C1DT6R6	0.75		Threaded Flange, ASME B16.5, ASTM A105N Galv. as per ASTM A153, 300 Lbs, RF/NPTF End, -, -, -	7	PCS		
88	C570A6BM	0.5	S-XXS	Weldneck Flange, ASME B16.5, ASTM A105N + Sour Service, 150 Lbs, RF/BW End, -, -, Caustic Service	49	PCS		
89	C570A6YX	6	S-STD	Weldneck Flange, ASME B16.5, ASTM A105N + Sour Service, 150 Lbs, RF/BW End, -, -, Caustic Service	4	PCS		

SR NO	Item Code	Size 1 (Inch)	WT1	Item Description	QUANTIT Y	UOM	Items available in Ex-Stock (Yes/No) (A)	Shortest Possible Delivery confirmation by Bidder (in Weeks) from the date of LOA (DAP Site basis) (B)
90	C570A6JJ	14	S-20	Weldneck Flange, ASME B16.5, ASTM A105N + Sour Service, 150 Lbs, RF/BW End, -, -, Caustic Service	3	PCS		
91	C4P0FZT	0.5	S-XXS	Weldneck Flange, ASME B16.5, ASTM A105N + Sour Service, 300 Lbs, RF/BW End, -, -, -,	2	PCS		
92	C4P0G0B	0.75	S-XXS	Weldneck Flange, ASME B16.5, ASTM A105N + Sour Service, 300 Lbs, RF/BW End, -, -, -,	17	PCS		
93	C1HN55A	3	S-160	Weldneck Flange, ASME B16.5, ASTM A105N + Sour Service, 300 Lbs, RF/BW End, -, -, -,	15	PCS		
94	C570A7A1	0.5	S-XXS	Weldneck Flange, ASME B16.5, ASTM A105N + Sour Service, 300 Lbs, RF/BW End, -, -, Caustic Service	78	PCS		
95	C570A7B4	1	S-160	Weldneck Flange, ASME B16.5, ASTM A105N + Sour Service, 300 Lbs, RF/BW End, -, -, Caustic Service	3	PCS		
96	C570A7CD	1.5	S-160	Weldneck Flange, ASME B16.5, ASTM A105N + Sour Service, 300 Lbs, RF/BW End, -, -, Caustic Service	10	PCS		
97	C570A7M0	2	S-160	Weldneck Flange, ASME B16.5, ASTM A105N + Sour Service, 300 Lbs, RF/BW End, -, -, Caustic Service	28	PCS		
98	C570A7TJ	3	S-XS	Weldneck Flange, ASME B16.5, ASTM A105N + Sour Service, 300 Lbs, RF/BW End, -, -, Caustic Service	4	PCS		
99	C570A8A0	2	S-160	Weldneck Flange, ASME B16.5, ASTM A105N + Sour Service, 600 Lbs, RF/BW End, -, -, Caustic Service	3	PCS		
100	C571DY9R	6	S-XS	Weldneck Flange, ASME B16.5, ASTM A105N + Sour Service, 600 Lbs, RF/BW End, -, -, Caustic Service	2	PCS		

SR NO	Item Code	Size 1 (Inch)	WT1	Item Description	QUANTIT Y	UOM	Items available in Ex-Stock (Yes/No) (A)	Shortest Possible Delivery confirmation by Bidder (in Weeks) from the date of LOA (DAP Site basis) (B)
101	C53P73FN	4	5.4MM	Weldneck Flange, ASME B16.5, ASTM A105N Epoxy Lined, 150 Lbs, FF/BW End, -, -, -	14	PCS		
102	C53P73HS	6	5.4MM	Weldneck Flange, ASME B16.5, ASTM A105N Epoxy Lined, 150 Lbs, FF/BW End, -, -, -	9	PCS		
103	C53P7369	12	6MM	Weldneck Flange, ASME B16.5, ASTM A105N Epoxy Lined, 150 Lbs, FF/BW End, -, -, -	10	PCS		
104	C53P7380	14	6MM	Weldneck Flange, ASME B16.5, ASTM A105N Epoxy Lined, 150 Lbs, FF/BW End, -, -, -	8	PCS		
105	C53P73BY	20	10MM	Weldneck Flange, ASME B16.5, ASTM A105N Epoxy Lined, 150 Lbs, FF/BW End, -, -, -	48	PCS		
106	C53GY6JE	6	5.4MM	Weldneck Flange, ASME B16.5, ASTM A105N Epoxy Lined, 150 Lbs, FF/BW End, -, -, Epoxy shall be Amine-cured, Potable water service	7	PCS		
107	C53GY6KS	8	6MM	Weldneck Flange, ASME B16.5, ASTM A105N Epoxy Lined, 150 Lbs, FF/BW End, -, -, Epoxy shall be Amine-cured, Potable water service	24	PCS		
108	C53GY67C	10	6MM	Weldneck Flange, ASME B16.5, ASTM A105N Epoxy Lined, 150 Lbs, FF/BW End, -, -, Epoxy shall be Amine-cured, Potable water service	9	PCS		
109	C53GY6CC	16	8MM	Weldneck Flange, ASME B16.5, ASTM A105N Epoxy Lined, 150 Lbs, FF/BW End, -, -, Epoxy shall be Amine-cured, Potable water service	6	PCS		
110	CBMNFZMJ	6	5.4MM	Weldneck Flange, ASME B16.5, ASTM A105N Epoxy Lined, 150 Lbs, RF/BW End, -, -, Epoxy shall be Amine-cured, Potable water service	5	PCS		
111	C5N69RFB	4	5.4MM	Weldneck Flange, ASME B16.5, ASTM A105N Galv. as per ASTM A153, 150 Lbs, FF/BW End, -, -, -	36	PCS		
112	CBMNB8VK	4	S-80	Weldneck Flange, ASME B16.5, ASTM A105N Galv. as per ASTM A153, 150 Lbs, RF/BW End, -, -, -	8	PCS		

SR NO	Item Code	Size 1 (Inch)	WT1	Item Description	QUANTIT Y	UOM	Items available in Ex-Stock (Yes/No) (A)	Shortest Possible Delivery confirmation by Bidder (in Weeks) from the date of LOA (DAP Site basis) (B)
113	C4EN1TGH	2	4.5MM	Weldneck Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF/BW End, -, -, -	8	PCS		
114	C7J18H7	2	S-160	Weldneck Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF/BW End, -, -, -	13	PCS		
115	C7YVL0J	2	S-STD	Weldneck Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF/BW End, -, -, -	80	PCS		
116	C7YVL22	3	S-XS	Weldneck Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF/BW End, -, -, -	2	PCS		
117	C4EN1TGP	4	5.4MM	Weldneck Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF/BW End, -, -, -	4	PCS		
118	CFG6WJF4	4	S-STD	Weldneck Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF/BW End, -, -, -	36	PCS		
119	C4EN1TGR	6	5.4MM	Weldneck Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF/BW End, -, -, -	3	PCS		
120	CFG6WJH2	6	S-STD	Weldneck Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF/BW End, -, -, -	24	PCS		
121	CFG6WJJC	8	S-STD	Weldneck Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF/BW End, -, -, -	19	PCS		
122	CFG6WJ2C	10	S-STD	Weldneck Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF/BW End, -, -, -	24	PCS		
123	CFG6WJ3S	12	S-STD	Weldneck Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF/BW End, -, -, -	28	PCS		
124	C1RYMH26	16	8MM	Weldneck Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF/BW End, -, -, -	3	PCS		
125	C4E77AYE	20	S-STD	Weldneck Flange, ASME B16.5, ASTM A105N, 150 Lbs, RF/BW End, -, -, IBR	5	PCS		
126	C2J3A65	2	S-STD	Weldneck Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/BW End, -, -, -	26	PCS		

SR NO	Item Code	Size 1 (Inch)	WT1	Item Description	QUANTIT Y	UOM	Items available in Ex-Stock (Yes/No) (A)	Shortest Possible Delivery confirmation by Bidder (in Weeks) from the date of LOA (DAP Site basis) (B)
127	C4EN1TSD	2	4.5MM	Weldneck Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/BW End, -, -, -	2	PCS		
128	CFG6WKPL	3	S-STD	Weldneck Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/BW End, -, -, -	6	PCS		
129	C7ZLW0C	4	S-XS	Weldneck Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/BW End, -, -, -	3	PCS		
130	CFG6WKS9	4	S-STD	Weldneck Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/BW End, -, -, -	23	PCS		
131	CFG6WKU7	6	S-STD	Weldneck Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/BW End, -, -, -	17	PCS		
132	CFG6WKVH	8	S-STD	Weldneck Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/BW End, -, -, -	71	PCS		
133	C1RYMH6U	10	6MM	Weldneck Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/BW End, -, -, -	3	PCS		
134	CFG6WKCH	10	S-STD	Weldneck Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/BW End, -, -, -	16	PCS		
135	CFG6WKDX	12	S-STD	Weldneck Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/BW End, -, -, -	8	PCS		
136	CFSJC8C	16	S-XS	Weldneck Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/BW End, -, -, -	3	PCS		
137	C4RWGSK9	2	S-STD	Weldneck Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/BW End, -, -, Hydrogen Service	5	PCS		
138	C4RWGSVC	6	S-STD	Weldneck Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/BW End, -, -, Hydrogen Service	10	PCS		
139	C4RWGSWU	8	S-STD	Weldneck Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/BW End, -, -, Hydrogen Service	13	PCS		
140	C4RWGSFB	14	S-STD	Weldneck Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/BW End, -, -, Hydrogen Service	3	PCS		

SR NO	Item Code	Size 1 (Inch)	WT1	Item Description	QUANTIT Y	UOM	Items available in Ex-Stock (Yes/No) (A)	Shortest Possible Delivery confirmation by Bidder (in Weeks) from the date of LOA (DAP Site basis) (B)
141	C4E77BXL	2	S-STD	Weldneck Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/BW End, -, -, IBR	10	PCS		
142	C4RWJT5C	12	S-40	Weldneck Flange, ASME B16.5, ASTM A105N, 300 Lbs, RF/BW End, -, -, IBR	5	PCS		
143	C12UUHD	10	S-80	Weldneck Flange, ASME B16.5, ASTM A105N, 600 Lbs, RF/BW End, -, -, ,	2	PCS		
144	C12UUJS	12	S-80	Weldneck Flange, ASME B16.5, ASTM A105N, 600 Lbs, RF/BW End, -, -, ,	4	PCS		
145	C135RWW	18	S-80	Weldneck Flange, ASME B16.5, ASTM A105N, 600 Lbs, RF/BW End, -, -, ,	3	PCS		
4.172 FLANGE - ALLOY STEEL								
1	C56367UH	0.75		Blind Flange, ASME B16.5, ASTM A182 Gr.F11 Cl.2, 600 Lbs, RF, -, -, IBR	11	PCS		
2	C56367VX	12		Paddle Blind & Spacer, ASME B16.48, ASTM A387 Gr.12 Cl.1, Between RF Flanges, as per ASME B16.5, -, 600 Lbs, With Jack Screw A193 Gr.B16, -, -, IBR	2	PCS		
3	C56366UY	0.75	S-XS	Socketweld Flange, ASME B16.5, ASTM A182 Gr.F11 Cl.2, 600 Lbs, RF/SW End, -, -, IBR	11	PCS		
4	C56366VL	1	S-XS	Socketweld Flange, ASME B16.5, ASTM A182 Gr.F11 Cl.2, 600 Lbs, RF/SW End, -, -, IBR	3	PCS		
5	C56367VJ	1		Spectacle Blind Fig.8, ASME B16.48, ASTM A387 Gr.12 Cl.1, Between RF Flanges, as per ASME B16.5, -, 600 Lbs, -, -, IBR	2	PCS		
6	C56366AY	12	S-XXS	Weldneck Flange, ASME B16.5, ASTM A182 Gr.F11 Cl.2, 600 Lbs, RF/BW End, -, -, IBR	5	PCS		
4.173 FLANGE - STAINLESS STEEL								
1	CFGCA3NW	0.5		Blind Flange, ASME B16.5, ASTM A182 Gr.F304/304L, 150 Lbs, RF, -, -, ,	5	PCS		

SR NO	Item Code	Size 1 (Inch)	WT1	Item Description	QUANTIT Y	UOM	Items available in Ex-Stock (Yes/No) (A)	Shortest Possible Delivery confirmation by Bidder (in Weeks) from the date of LOA (DAP Site basis) (B)
2	CFGCA3NX	0.75		Blind Flange, ASME B16.5, ASTM A182 Gr.F304/304L, 150 Lbs, RF, -,-,-,	10	PCS		
3	CFGCA3P6	2		Blind Flange, ASME B16.5, ASTM A182 Gr.F304/304L, 150 Lbs, RF, -,-,-,	4	PCS		
4	CFGCA3PA	3		Blind Flange, ASME B16.5, ASTM A182 Gr.F304/304L, 150 Lbs, RF, -,-,-,	1	PCS		
5	CTRE0VR	0.5	S-80S	Socketweld Flange, ASME B16.5, ASTM A182 Gr.F304/304L, 150 Lbs, RF/SW End, -, -, -, -,	174	PCS		
6	CTRE0WA	0.75	S-80S	Socketweld Flange, ASME B16.5, ASTM A182 Gr.F304/304L, 150 Lbs, RF/SW End, -, -, -, -,	10	PCS		
7	CX36PL	1	S-40S	Socketweld Flange, ASME B16.5, ASTM A182 Gr.F304/304L, 300 Lbs, RF/SW End, -, -, -, -,	9	PCS		
8	CTDZHAY	8		Spectacle Blind Fig.8, ASME B16.48, ASTM A240 Gr.304/304L, Between RF Flanges, as per ASME B16.5, -, 150 Lbs, With Jack Screw A193 Gr.B7, -, -, -, -,	2	PCS		
9	CFGCA3HL	3	S-10S	Weldneck Flange, ASME B16.5, ASTM A182 Gr.F304/304L, 150 Lbs, RF/BW End, -, -, -, -,	3	PCS		
10	CFGCA3ND	8	S-10S	Weldneck Flange, ASME B16.5, ASTM A182 Gr.F304/304L, 150 Lbs, RF/BW End, -, -, -, -,	4	PCS		
11	CX3844	2	S-40S	Weldneck Flange, ASME B16.5, ASTM A182 Gr.F304/304L, 300 Lbs, RF/BW End, -, -, -, -,	4	PCS		

Note:

1. Bidders who have confirmed to Ex-Stock delivery (under Column 'A') shall be given First Preference for issuance of tender.

2. Bidders who have confirmed for shortest delivery (under Column 'B') shall be given subsequent preference for issuance of Tender.

3. The final decision to float a tender to a particular bidder shall solely lie with NRL/MPMC. Decision taken by NRL / MPMC shall be construed as final.



NUMALIGARH REFINERY LIMITED

Total pages: 12

NRL EXPANSION PROJECT

SPECIFICATION FOR SUPPLY FLANGES, SPECTACLE BLINDS & DRIP RINGS

MASTER PIPING

SIGNATURE: DR
DATE : 09/09/202


D2	09/09/2022	Approved for Enquiry	DRK	JAK	JL			
D1	23/12/2021	Approved for Enquiry	DRK	JAK	JL			
Rev.	Date	Reason for Issue	Prepared	Checked	Approved	Prepared	Review	Review
 TECHNIP INDIA LIMITED			Discipline Engineer	Discipline Lead	Contractor Representative	Discipline Engineer	Project Engineer	Department Head
			TPIL			NRL		
			Category		Code	Description		
			Facility Area Code		IZ	Common Document		
NRL's PO NO: 4300062833-AMA/16.06.2020			Document Type		SPE	Specification		
TP DOC REF: 082167C-ZZZ-JSS-1350-0001-D2			System Number		00	General		
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1. Introduction:

NUMALIGARH REFINERY LIMITED (NRL) has awarded Letter of Acceptance (LOA) dated 4th May 2020 to M/s. Technip India Limited (TPIL) for Project Management Consultancy services (Managing PMC) to provide PMC/EPCM services for BDEP preparation for Open Art units, FEED for Licensed Process units, Tendering & Award of EPC / LSTK contracts for identified process units in EPC mode, Detailed Engineering, Procurement & Expediting services for units identified as EPCM/ Conventional mode, interface management for EPCM-1/EPCM-2/ BOO contractors to be engaged by NRL, Construction Management & Supervision, Assistance in start-up, Commissioning & performance test runs for Numaligarh Refinery Expansion Project (NREP) from 3 to 9 MMTPA of its Refinery in Numaligarh, Golaghat District, Assam, India.

2. Definitions & Abbreviations:

Wherever used in this procedure, the following words shall have the meaning as given hereunder:

Abbreviation	Definition /Expanded form
NRL / OWNER / CLIENT	shall mean Numaligarh Refinery Limited
CONTRACTOR / MPMC / EPCM	Managing PMC (shall mean Technip India Limited)
SUPPLIER / VENDOR	Any third party supplying the equipment/materials for setting up the Plant
SUB-SUPPLIER / SUB-VENDORS / VENDOR	Any party with whom VENDOR has entered any subcontract.
SUB CONTRACTORS	
LLI	Long Lead Item – Any critical equipment / Package recommended by Licensor for Process units and agreed by NRL/ CONSULTANT to be considered as Long Delivery Item from schedule and market delivery point of view
PROJECT / NREP	Indicates Numaligarh Refinery Expansion Project (NREP)
SITE	Indicates NRL's Refinery in Numaligarh, Golaghat District, Assam, India
UNIT	Indicates any particular portion of the NREP to be built which can be Process related or Utilities/Offsites related
TPI or TPIA	Third Party Inspection Agency
ASTM	American Society of Testing and Metals
BIS	Bureau of Indian Standards
BOM	Bill of Material
Cl	Class
CS	Carbon Steel.
EN	Euro Norms.
Gr	Grade
H2	Hydrogen
HAZ	Heat Affected Zone
HIC	Hydrogen Induced Cracking
HF	Hydrofluoric Acid
IBR	Indian Boiler Regulations
IS	A prefix included to material specification number that confirms to Bureau of Indian Standards.
IS.ISO	Indicates that BIS has adopted ISO standard as an Indian Standard.
ITP	Inspection and Test Plan
ITR	Inspection and Test Requirement generally attached along with the bid document.
LAS	Low Alloy Steel.
LTCS	Low Temperature carbon Steel.

MDMT	Minimum Design Metal Temperature (Design Temperature at the lower end).
MR	Material Requisition
MTR	Material Test Record
MTC	Material Test Certificate
NACE	National Association of Corrosion Engineers
NDE	Non-Destructive Examination (Same as NDT)
PO	Purchase order
PR	Purchase Requisition
QCP	Quality Control Plan.
RT	Radiographic Testing
SS	Stainless-Steel (In this specification, it indicates Austenitic Stainless Steel).
SSC	Sulphide Stress Cracking
TP	Indicates Type and generally indicates the alloy that has the alloy number that follows the letter TP.
"/" Whenever and wherever "/"	It indicates "and or"
MTC=MTR	They have the same meaning and intent and are used interchangeably.
Sour Service	As defined in ANSI-NACE MR 0103/ISO 17945-1 and NR-0ZZZZ-PI-SPE-0025.

3. Purpose

This specification covers the technical requirements for procurement of new and unused forged items like flanges, Orifice Flanges, and items made either from forging or from plates such as Figure-8 Blank, Spectacle Blinds, Paddle Spacer, Paddle Blinds, & Drip Rings, to be used for Numaligarh Refinery Expansion Project.

This specification shall be read in conjunction with the material requisition, commodity code description (if any) and the relevant codes and standards.

This specification does not exclude consideration of the SUPPLIER's standard practices or alternative recommendations. Such deviations shall, however, be clearly stated as "exceptions" for APPROVAL by CONTRACTOR

If no exceptions are stated, it shall be mutually understood that the supplied items will be in exact accordance with this specification.

Reference Documents

- | | | |
|------------------------------|---|---|
| 1) NR-0ZZZZ-PI-SPE-0001 | - | Piping Material Specification |
| 2) NR-0ZZZZ-PI-SPE-0025 | - | Specification For Material Requirements For Carbon Steel Components Used In Sour Service In Petroleum Refinery Environments |
| 3) NR-0ZZZZ-PI-SPE-0032 | - | Specification For Positive Material Identification |
| 4) 082167C-ZZZ-JSS-1360-0001 | - | Specification for Gaskets And Fasteners |

4. Exclusions

- A. Refurbished & used items.
- B. Flanges used in Pipeline.
- C. API 6A Flanges.
- D. Cast Flanges.
- E. Flanges that are integral to Pumps, Compressors & Turbine Casings.

5. Order Of Precedence

In case of conflict between requirements specified herein and the requirements of any other referenced document, the order of precedence shall be:

- Material requisition,
- This specification,
- Referenced codes and standards

In any case, the SUPPLIER shall notify CONTRACTOR of all conflicts among the aforesaid documents. Resolution and/or interpretation precedence shall be obtained by the SUPPLIER in writing before proceeding with the design or the manufacturing.

6. Inspection:

All items shall be supplied as a minimum with BSEN 10204 type 3.1 certificate or IS.ISO 10474 type 3.1/3.1(B) certificate.

Following items shall have BSEN 10204 type 3.2 certification or IS.ISO 10474 type 3.2 certification under NRL approved reputed third party inspection agency.

- a) For CS items in pipe class rating 1500 and above,
- b) For LAS items in pipe class rating 900 and above,
- c) For SS items in pipe class rating 600 and above
- d) For Monel, Inconel, Incoloy items in pipe class rating 300 and above

The extent of inspection intervention will be addressed in the Inspection and Test requirements pertaining to a given purchase order.

7. IBR (Indian Boiler Regulations) Items.

BOM of MR/PO shall clearly identify the items that are under the IBR. In addition to meeting the requirements specified under general requirements of this specifications, all IBR items shall be meet IBR requirements. All IBR items shall be supplied with IBR form IIIC, in original, duly approved, signed by IBR authority or authorities who are allowed by the IBR to act on their behalf. Photocopy of the original certificate duly attested by IBR authority may be accepted.

8. General Requirements

- A. Flanges shall be in accordance with ASME B16.5 or shall be in accordance with ASME B16.47. or AWWA C207 as mentioned in the BOM of MR/PO. The use of other types of flanges is subject to the approval of the Company.
- B. All WN (Weld Neck) Flanges shall be supplied with end bevelled as per the table below. Bore of Slip-On & Socket Weld Flange shall suit the OD of the matching pipe.

Material	Thickness	Weld Edge Contour (Refer to B16.25)
Carbon Steel except LTCS	≤ 22 mm	Figure 2 Type A of B16.25
	> 22 mm	Figure 3 Type A of B16.25
LTCS, LAS, SS	≤ 10 mm	Figure 4
	10 mm < thickness ≤ 25 mm	Figure 5 Type A of B16.25
	> 25 mm	Figure 6 Type A of B16.25

- C. Steel Line Blanks (Spectacle Blinds) shall be as per ASME B16.48
- D. The Ends of Screwed items shall have taper threads as per ASME/ANSI B1.20.1 for sizes ≤ 1.5” NPS and as per IS 554 for sizes ≥ 2” NPS and ≤ 6” NPS, unless specified otherwise.
- E. Galvanized items shall be Hot Dip Galvanized to IS 4736 or ASTM A123.
- F. Orifice Flanges, Class 300, 600, 900, 1500, and 2500 shall be as per ASME B16.36. For class 150 rating piping, Class 300 Flanges are recommended. In the event the piping and Instrument discipline engineer intends to use Class 150 rating flanges for orifice application, then flange design shall be verified, in any case, approval from NRL/MPMC/EPCM shall be obtained.
- G. All forged items shall be forged close to final shape before machining to ensure adequate grain flow at changes of section. Repair of the base material by welding is not allowed.
- H. All items shall be supplied with material test report (MTR) (this is sometimes called as material test certificate, MTC). In addition to the properties (all the applicable properties and tests such as mechanical, bend, chemical, charpy impact, corrosion, heat treatment conditions), hardness values for each rating & size and each heat of steel shall be reported in the MTR (or as an annexure to the MTR),
- I. Hardness of CS forgings at any location on the forging shall be between 140 to 197 HBW (Also sometimes indicated as BHN). All forgings not within the specified hardness range shall be rejected or be subjected re-heat treatment. Frequency of Hardness test shall be as per the material specification. Hardness test shall be conducted in the laboratory as per the frequency given in A182 for LAS forgings. For SS forgings, although ASTM standard specification does not call for hardness test as a part of the standard specification for some alloys, hardness test shall be conducted at a frequency of 1 per heat per NPS per rating and the values shall be reported in the MTR. The hardness values shall be in compliance with ASTM A182 table 3 for LAS forgings & Flanges and Maximum 22 HRC for Austenitic Stainless-Steel Flanges and Forgings.
- J. Minimum hardness of any or all LAS items supplied at any location shall be as follows 150 HB. Minimum hardness for 304L and 316L items shall be 140 HB. Minimum hardness of 304, 316, 321, 347H shall be 160.
- K. For LAS items Maximum tensile strength of the all three Low alloy material shall be 100,000 PSI.
- L. Max %C for 304, 304L, 316, 316L shall be 0.03%. When SS304 is ordered, dual certification & marking to 304/304L shall be supplied. When SS316 is ordered, supplied items shall be marked and dual certified to SS316/316L.
- M. 304/304L/316/316L items shall be supplied in Solution Annealed Condition. 321/347/347H items shall be

supplied in Solution annealed and thermally stabilized heat-treatment condition. Subsequent to the solution anneal heat treatment 321/347/347H shall be given a stabilization heat treatment at a temperature lower than that used for the initial solution annealing heat treatment. Soaking temperature for stabilization heat treatment may be 900 °C with 4.7 min/mm of thickness or 2 hours whichever is higher.

- N. For All Austenitic Stainless-Steel (SS) items, Samples from each heat number shall be subjected to A262 IGC Pr E. Use of Rapid Screening option (A262 Pr A) in-Lieu of other tests is not acceptable.
- O. All Monel & Inconel items shall be in Annealed Condition.
- P. For Monel 400 and Inconel 625 items shall be subjected to ASTM G48 Method A test as a part of production test. Test Frequency shall be identical to tensile test frequency. The test temperature shall be 50 OC, exposure time 72 hours. Cut edges shall be prepared according to ASTM G48 and pickled (20% HN03 + 5% HF 60 OC for 5 minute). The acceptance criteria shall be; No pitting at 20 x magnification.
- Q. Inconel 625 items shall be subjected to corrosion test as per G28 method A, with an acceptance criterion of 0.9 mm/y.
- R. Each piece of LAS, SS and High alloy items shall be subjected to PMI (Positive Material Identification) and the Report shall be submitted along with the MTR/MTC.
- S. All items shall have hard stamp on the OD and shall be clear and conspicuous. In addition to the marking specified in the respective ASTM, all LAS and SS items shall have "PMI OK" or "AV" marked just adjacent to the flange marking.
- T. Orifice flanges shall be furnished in pairs (1 set), and shall be supplied with jackscrews (jack screw shall meet the project specification 082167C-ZZZ-JSS-1360-0001) but without bolts or gaskets. Forging requirements given in this specification shall be applicable for this item.
- U. Requirements for Figure 8, Spectacle Blinds, Paddle Spacers, Paddle Blanks, Hammer Blinds, Drip Rings & Blind Flanges to B16.47 may be machined from Plates and shall meet the following
 - a. Items order as forged items shall meet requirements of forging specified in this document against the material specification.
 - b. For Carbon Steel items, that are machined from plate, the plate material shall comply with A516 Gr 60 or A 285 Gr C, % C \leq 0.23 & Mn/C > 5 or from IS 2062 E250-C, Mn/C > 5.
 - c. All LAS Plates shall be ASTM A387 and the alloy grade shall be as per Bill of Material/Purchase order.
 - d. All SS Plates shall be A240 and the and alloy grade shall be as per Bill of Material/Purchase order.
 - e. Fabricating Figure 8, Spectacle blinds etc are permitted so long as the weld will not be in contact with the service fluid. The weld shall be positioned such that the weldment will never be in contact with the service fluid. All welding shall be carried out using WPS supported by PQR. WPS and PQRT shall be as per ASME Sec IX and shall be duly witnessed and approved by a reputed third-party inspection/certification agency approved by NRL.
 - f. Bleed Holes/Drip Holes shall be fitted with plastic plugs.
 - g. If vendor supplied spectacle blind weight is more than 23 kg. (50 lbs.), vendor has to be clearly mentioned in their offers. For such cases, Paddle blind and spacer shall be furnished.
- V. All Stainless-steel & High Nickel Alloy items shall be Blast & Passivated or Pickled & Passivated.
- W. Paints, Dyes & Inks used for marking shall be free from Chlorides and Sulphides and harmful halogens and metallic salts of Zinc, Lead and Copper.

- X. For all A105 flanges and A516 plates, the ratio of Manganese to Carbon shall be 5 (or higher) or the grain size shall be 5 or finer (ASTM E112) to prevent brittle fracture.
- Y. All items shall be clean, dry and free from debris, rust, mud, dust, loose foreign material, scales. All items shall be protected against rusting. Varnish/Rust Protection Oils or other suitable rust preventives may be applied on the Carbon Steel and Low alloy steel items as per the manufacturer's standard practice, if such method is used, the fluid used for protecting shall not have constituents that will react with the metal surface or corrode the metal surface.

9. Requirements for items in Sour Service, H2, HF Service & Corrosive Process Service.

- A. In addition to meeting the general requirements and ASTM requirements, the following requirements shall apply for items in Sour, H2, HF & Corrosive process service. Wherever specific service is not mentioned in a particular clause, then the requirement applies to Sour, H2, HF & Corrosive process service. If a particular clause states specific service(s), then the requirement specified in that clause shall be applied only for that particular service.
- B. CS & LAS items shall be made in an open-hearth, basic-oxygen, or electric-arc furnace and shall be fully killed. The MTR shall indicate the steel making practice.
- C. All CS items shall be in Normalised condition irrespective of the rating & All LAS items shall be in Normalized and Tempered Condition.
- D. In addition to the Heat Analysis, Product analyses shall be reported. Product analysis shall be made from each heat of steel for each rating & NPS. The results of these analyses shall be indicated in the MTR and shall confirm to the Chemical Composition given in ASTM and this section of the specification.
- E. For items in Sour Service, MTR shall indicate that the supplied material is in compliance with ANSI NACE MR 0103 ISO 17945-1.
- F. For CS & LAS items in Sour Service deliberate addition of niobium, titanium and boron in steel to improve tensile properties shall be avoided.
- G. For CS, LAS & SS Items in Sour service: Steel shall not contain deliberate additions of elements such as lead, selenium, or sulfur to improve machinability.
- H. For ASTM A105 in Sour Service & HF service, the composition of the following elements shall also be shown in the MTR: niobium, vanadium, titanium, nickel, copper, and boron and the following chemical restrictions apply.
 - i. Maximum boron shall be 5 PPM.
 - ii. Maximum Vanadium = 0.02 wt %
 - iii. Maximum Niobium = 0.02 wt %
 - iv. Maximum % Sulphur shall be 0.025%.
 - v. Maximum % Phosphorous shall be 0.030%.
 - vi. Maximum Vanadium plus Niobium = 0.03 wt %
 - vii. Maximum Nickel + Copper = 0.15 wt %.
 - viii. Mn/C \geq 5 in heat analysis and both the product analysis.
 - ix. Maximum % Carbon in all Carbon steel Items shall be \leq 0.23%
 - x. For Steel with thickness \leq 25 mm CE shall be \leq 0.43.
 - xi. For Steel with thickness $>$ 25 mm CE shall be \leq 0.45.
 - xii. Carbon Equivalent CE = $C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15$
 - xiii. Only for Hydrofluoric Acid Service: Minimum % C shall be 0.18%

- I. CS & LAS items with thickness (Governing thickness as per UW 40 of ASME Sec VIII Div 1), higher than 19.05 mm, Charpy impact test shall be conducted at 5°C MDMT. The acceptance criteria is 27J for min average and 19J minimum individual. For items containing welds Impact test shall be on base metal, HAZ and weld metal.
- J. All forged Items in pipe class 900 rating and above shall comply with S 20 (Ultrasonic Examination). BR or DA and S examination are required. MTR shall indicate that each and every piece has been tested meeting A788 Supplementary S20 requirement. Alternatively, a separate ultrasonic examination report annexure shall be provided. Ultrasonic examination shall be carried out prior to drilling of bolt holes.
- K. For LAS forgings, the following elements shall be indicated in the MTR and shall also be included in the product analysis/check analysis: As, Cu, Nb, Sb, Sn, V.
- L. For F5 (5Cr–0.5Mo) forgings the following shall apply:
- Maximum % S shall be $\leq 0.025\%$ and
- M. For F11 Cl 2 (1.25% Cr-0.5 Mo) in H2 & Sour Service, the chemical composition shall meet the following additional chemical requirements by heat analysis & product analysis:
- i. Max % C 0.15 %,
ii. Max % P 0.012 %,
iii. Max % S, 0.012 %,
iv. Max % Cu 0.20 %,
v. Max % Ni 0.30 %
vi. Max “X” Factor shall be 14, Where $X = (10P + 5Sb + 4Sn + As)/100$ {elements in ppm}.
- N. For F22 Cl 3 (2.25Cr-1Mo) LAS, in H2 service, Max % S shall be 0.025%. Following elements are required to be analysed in addition to the elements listed in the ASTM. Sn, Sb, As, Cu, Ni
- i. Cu content: 0.20% maximum
ii. Ni content: 0.30% maximum
iii. J and X factors shall be maximum of 100 and 15, respectively and $(P + Sn)$ shall be less than 0.01 %. Where $J = (Si + Mn) \times (P + Sn) \times 104$ {elements in wt %}.
- O. For items made from plates, the Plate MTR shall indicate the steel making practice. Deliberate addition of Micro-alloying elements like V (Vanadium), Cb (Nb) (Columbium/Niobium), B (Boron), Ti (Titanium), Lead (Pb), Selenium (Se), and Sulphur (S) to improve properties (Tensile and or Machinability) is not allowed.
- P. MTR of the CS Plate shall have both heat analysis and product analysis. Product analysis shall be at least 1 per heat per thickness.
- a) Carbon $\leq 0.23\%$
- b) Vanadium (V) and niobium (Nb) maximum content based on heat analysis shall be:
- c) Maximum vanadium (V) = 0.02 %
- d) Maximum niobium (Nb) = 0.02 %
- e) Maximum vanadium plus niobium = 0.03 %
- f) (Note: niobium (Nb) = columbium (Cb).)
- g) The maximum nickel (Ni) plus copper (Cu) shall be 0.15 %.

- h) Mn/C ≥ 5 in heat analysis and both the product analysis
 - i) S ≤ 0.002 %
 - j) P ≤ 0.01 %
 - k) Carbon Equivalent $CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15$
 - l) For Steel with thickness ≤ 25 mm CE shall be ≤ 0.43 .
 - m) For Steel with thickness > 25 mm CE shall be ≤ 0.45 .
 - n) Only for Hydrofluoric Acid Alkylation Service, in addition to the above the minimum carbon (C) content based on heat analysis shall be 0.18 % and in addition to the requirements for product marking in the specification, an “HF-N” stamp or marking shall be provided on each plate to identify that the plate complies with this supplementary requirement.
- Q. The Steel for Carbon Steel Plates shall be vacuum degassed/Vacuum treated. In the event the steel is Vacuum Carbon-Deoxidized Steel then Supplementary S17 of A 20 is applicable. Steel shall be Calcium treated for Sulphur Shape control. The steel shall be killed and shall conform to the fine austenitic grain size requirement of clause 8.3 of Specification A20/A20M and the MTR shall provide the limits of Aluminium as per 8.3.2 or provide the grain size as determined by ASTM E112 McQuaid Ehn test. Plates 50 mm thickness and above, through thickness test as per A770 shall be carried out as per the frequency and location specified in A770 and the minimum % reduction Area shall be 35%. Through thickness test results shall be indicated in the MTR. The ratio of reduction of thickness from a strand-cast slab (also called continuous cast) to plate shall be at least 3.0:1.
- R. For items made from Plates ≥ 10 mm shall be subjected 100% Ultrasonic testing with 100% surface scanning from at least one side as per ASTM A578 level B.
- S. After Machining, all CS & LAS items shall be subjected to 100% MPI (Magnetic Particle testing), SS and High Nickel alloy items shall be subjected to 100% DP (Dye Penetrant) testing.
- T. For CS items in HIC test service, requirements given in NR-0ZZZZ-PI-SPE-0025 shall be applicable and shall be followed.
- U. MTR of the LAS Plate shall have both heat analysis and product analysis. Product analysis shall be at least 1 per heat per thickness.
- I. For Plate Material 5Cr-1/2Mo, A387 Gr. 5 Cl. 1. ASME Sec IX P4 Material.
 - 1. Maximum Sulphur shall be 0.003% and
 - 2. Maximum Carbon Shall be 0.15%
 - 3. Maximum Cu shall be 0.20 wt. %,
 - 4. Maximum Ni shall be 0.30 wt%
 - II. For Plate Material 1.25-0.5 Mo-Si A387 Gr. 11 Cl. 1 ASME Sec IX P5B Material.
- X-bar < 15 , Where X-bar = $(10P + 5Sb + 4Sn + As)/100$ [with P, Sb, Sn, and As in ppm]. Following elements shall be analyzed in addition to the chemical elements listed in ASTM.

The Chemistry limits for other elements are as follows.

C = 0.15 wt. %, maximum

P = 0.010 wt. %, maximum

S = 0.003 wt. %, maximum

Cu = 0.20 wt. %, maximum

Ni = 0.30 wt. %, maximum

Nb = 0.006 wt. %, maximum

V = 0.025 wt. %, maximum

Ti = 0.02 wt. %, maximum and

III. For Plate Material 2.25Cr–1Mo A387 Gr. 22 Cl. 1. ASME Sec IX P5A Material.

% S Maximum shall be 0.003.

Following elements are required to be analysed in addition to the elements listed in the ASTM. Sn, Sb, As J and X factors shall be maximum of 100 and 15, respectively and (P + Sn) shall be less than 0.01 %. Where $J = (Si + Mn) \times (P + Sn) \times 10^4$ {elements in wt %}.

Cu content: 0.20% maximum

Ni content: 0.30% maximum.

IV. After Machining, all items shall be subjected to 100% MPI (Magnetic Particle testing) as per

ASME Sec VIII Div 1 Appendix 6.

- V. Hardness test shall be conducted in the laboratory 1 per heat per thickness. Minimum hardness of any or all LAS items made from plates at any location shall be 150 BHN, the maximum hardness values shall be 225 HBW.
- W. Fabricating (Welded) Figure 8, Spectacle blinds are not permitted. The required shape shall be cut from plate and shall be machined.
- X. For SS items in Sour Service, Hardness test shall be conducted in the laboratory 1 per heat per NPS per rating per thickness and the values shall be reported in the MTR. The hardness values shall be Maximum 22 HRC for SS items in compliance with ANSI/NACE MR 0103/ISO 17945-1.
- Y. For items in Sour and Corrosive process and H2 Service, after Machining, all items shall be subjected to 100% DP (Dye Penetrant) testing as per ASME Sec VIII Div 1 Appendix 8.
- Z. For SS 316 & SS 316L items in Corrosive Process service % Mo \geq 2.5%, alternatively SS 317 may be used with due approval of NRL/Contractor.

10. CPVC Flanges

- 10.1 Flange shall be CPVC type 4120; Cell Classification 23448 and shall be in accordance with ASTM D1784 and ASTM F439.
- 10.2 For CPVC Flanges, Wherever “Potable water service” is mentioned in requisition, ASTM F439 supplementary requirement – “S3.Potable water requirement” shall be complied.
- 10.3 Vendor shall provide their suitable recommendation for primer and Solvent of CPVC flanges.

11. Marking & Color coding

- 11.1 Items Identification shall as a minimum be as per MSS SP 25. And ident code shall be punched / mentioned for each item as per Requisition.
- 11.2 Each item color coding shall be as per Specification for colour coding of piping materials By vendor (TP-1ZZZA-PI-SPE-0011)

12. Packing, Shipping & End Protection

- 12.1 Packing, Marking on packings and Shipping requirements shall be complied as per Packing, Marking & Shipping Specifications (TP-1ZZZA-PQ-SPE-0003).
- 12.2 Flange faces & Bevels shall be protected using wood, plastic cover or metallic covers.