



मंगलूर रिफाइनरी एण्ड पेट्रोकेमिकल्स लिमिटेड
MANGALORE REFINERY & PETROCHEMICALS LTD.
(ऑयल एण्ड नेचुरल गैस कॉरपोरेशन लिमिटेड की सहायक कंपनी)
(A Subsidiary of Oil and Natural Gas Corporation Ltd.)
मंगलूर Mangaluru

Addendum 01

To

MRPL Tender No. 3200000705 dated 25.07.2023

**TENDER FOR PIPING/ STRUCTURAL JOBS FOR PROJECT DEPARTMENT, MRPL,
MANGALURU, KARNATAKA.**

With reference to the above tender, bidders are requested to note the following:

The items, conditions, specification and stipulations of the Bidding Documents and modified to the extent indicated in

i) Annexure -1 – Commercial Addendum.

The implications of the same, elsewhere in the tender shall be taken care of appropriately by the bidders. All other terms and conditions, stipulations and specifications of tender shall remain unaltered.

Note:

Bidders shall submit copy of these documents along with the technical–commercial bid, **duly signed and stamped**, as a token of having read and understood the same.

Addendum 01 – Annexure-1: Commercial Addendum

SI No.	Section No./Clause No.	Addition/ Deletion/ Modification
1)	Volume-I: Commercial Section, (Page No.386-396) Annexure-I (SCHEDULE OF RATES)	Bidder to note and consider Revised SCHEDULE OF RATES as per <u>Annexure-A</u> below.

ANNEXURE-A

Item Sr. No	ITEM DESCRIPTION	UOM	QTY	Unit Rate (in INR)	Amount (in INR)
1	<p>PIPING (ABOVE GROUND) :- Transportation of all piping items from Owner's storage point to work site/work shop; fabrication including cutting, edge preparation, (inclusive of grinding the edges of pipe, fittings, flanges etc. to match with the mating edges of uneven/different thickness wherever required); fitup, bending, preheating wherever required, welding, threading, and laying of pipes of all types and thickness over sleepers, overhead on racks and at all elevations, connecting with equipment nozzles, strainers, steam traps, orifice assemblies, spray nozzles, rotameters, tappings for pressure gauges, thermowells, sample connections, springs etc. including fixing of gaskets, bolts, nuts wherever required & all other inline instruments and fittings, like elbows, reducers, tees, vents, drains (but excluding reinforcing pads), valves upto 1.5 NB alignment, cleaning & flushing by water/compressed air, hydrostatic, pneumatic, vacuum, spark testing and any other type of testing as specified draining, drying by compressed air, completing all such works in all respects as per the specifications, drawings and instructions of Engineer-in-Charge. Rates for tubing (if any) shall include rates for valves, fittings, all in line instruments and testing etc. Carbon steel piping includes LTCS piping also. PMI shall be performed by third party as defined in PMI spec.</p>				
1.1	CARBON STEEL PIPING (NON IBR)				
1.1.1	FABRICATION (BUTT WELD):THK<8 mm				
a	NB 2 INCH - 6 INCH	Inch Dia.	4,000.00	637.35	25,49,400.00
b	NB 8 INCH TO 14 INCH	Inch Dia.	300.00	637.35	1,91,205.00
c	NB 16 INCH - 24 INCH	Inch Dia.	100.00	637.35	63,735.00

1.1.2	FABRICATION (BUTT WELD):THK>=8 mm				
a	NB 8 INCH TO 14 INCH	Inch Dia	200.00	655.60	1,31,120.00
b	NB 16 INCH TO 36 INCH AND ABOVE	Inch Dia	7,400.00	655.60	48,51,440
1.1.3	FABRICATION (FILLET WELD)				
a	NB UPTO 1.5 INCH	Inch Dia	1,000.00	546.30	5,46,300.00
1.1.4	ERECTION				
a	NB UPTO 1.5 INCH	Inch M	200.00	227.63	45,526.00
b	NB 2 INCH - 6 INCH	Inch M	1,500.00	227.63	3,41,445.00
c	NB 8 INCH TO 14 INCH	Inch M	1,500.00	227.63	3,41,445.00
d	NB 16 INCH TO 36 INCH AND ABOVE	Inch M	36,491.67	227.63	83,06,599.21
1.2	CARBON STEEL PIPING (IBR)				
1.2.1	FABRICATION (BUTT WELD):THK<8 mm				
a	NB 2 INCH - 6 INCH	Inch Dia.	100.00	673.78	67,378.00
b	NB 8 INCH TO 14 INCH	Inch Dia.	100.00	673.77	67,377.00
1.2.2	FABRICATION (BUTT WELD):THK>=8 mm				
a	NB 8 INCH TO 14 INCH	Inch Dia.	7.82	691.98	5,413.64
1.2.3	FABRICATION (FILLET WELD)				
a	NB UPTO 1.5 INCH	Inch Dia.	400.00	564.51	2,25,804.00
1.2.4	ERECTION				
a	NB UPTO 1.5 INCH	Inch M	800.00	227.63	1,82,104.00
b	NB 2 INCH - 6 INCH	Inch M	500.00	227.63	1,13,815.00
1.3	CARBON STEEL PIPING LTCS				
1.3.1	FABRICATION (BUTT WELD)				
a	NB 2 INCH - 6 INCH	Inch Dia.	300.00	655.60	1,96,680.00
b	NB 8 INCH - 14 INCH	Inch Dia.	5.22	655.60	3,419.35
1.3.2	FABRICATION (FILLET WELD)				
a	NB UPTO 1.5 INCH	Inch Dia.	50.00	655.60	32,780.00
1.3.3	ERECTION				
a	NB UPTO 1.5 INCH	Inch M	10.00	227.63	2,276.30

b	NB 2 INCH - 6 INCH	Inch M	150.00	227.63	34,144.50
1.4	CARBON STEEL PIPING (NACE)				
1.4.1	FABRICATION (BUTT WELD):THK<8 mm				
a	NB 2 INCH - 6 INCH	Inch Dia.	100.00	655.60	65,560.00
b	NB 8 INCH TO 14 INCH	Inch Dia.	500.00	655.60	3,27,800.00
c	NB 16 INCH - 24 INCH	Inch Dia.	20.00	655.60	13,112.00
1.4.2	FABRICATION (BUTT WELD):THK>=8 mm				
a	NB 8 INCH TO 14 INCH	Inch Dia.	200.00	655.60	1,31,120.00
b	NB 16 INCH - 24 INCH	Inch Dia.	20.00	655.60	13,112.00
1.4.3	FABRICATION (FILLET WELD)				
a	NB UPTO 1.5 INCH	Inch Dia.	100.00	546.30	54,630.00
1.4.4	ERECTION				
a	NB UPTO 1.5 INCH	Inch M	20.00	227.63	4,552.60
b	NB 2 INCH - 6 INCH	Inch M	20.00	227.63	4,552.60
c	NB 8 INCH TO 14 INCH	Inch M	1,000.00	227.63	2,27,630.00
1.5	CARBON STEEL PIPING (NACE+HIC)				
1.5.1	FABRICATION (BUTT WELD)				
a	NB 2 INCH - 6 INCH	Inch Dia	3,620.93	655.60	23,73,881.90
1.5.2	FABRICATION (FILLET WELD)				
a	NB UPTO 1.5 INCH	Inch Dia	1,562.07	655.60	10,24,094.53
1.5.3	ERECTION				
a	NB UPTO 1.5 INCH	Inch M	99.10	227.63	22,557.31
b	NB 2 INCH - 6 INCH	Inch M	2,324.85	227.63	5,29,206.45
1.6	STAINLESS STEEL PIPING				
1.6.1	FABRICATION (BUTT WELD)				
a	NB 2 INCH - 6 INCH	Inch Dia	36.51	1,302.02	47,535.71
1.6.2	FABRICATION (FILLET WELD)				
a	NB UPTO 1.5 INCH	Inch Dia	769.30	1,047.10	8,05,535.08

1.6.3	ERECTION				
a	NB UPTO 1.5 INCH	Inch M	219.06	300.50	65,826.09
b	NB 2 INCH - 6 INCH	Inch M	3.92	300.50	1,177.96
1.7	CARBON STEEL GALVANIZED				
a	NB UPTO 1.000 INCH	Mtr.	577.20	637.40	3,67,907.28
b	NB UPTO 2.000 INCH	Mtr.	1,138.80	637.40	7,25,871.12
c	NB UPTO 3.000 INCH	Mtr.	1,700.40	637.40	10,83,834.96
1.8	STEAM TRACERS CARBON STEEL				
a	NB 0.500 INCHES	Mtr.	218.40	637.40	1,39,208.16
2	VALVES AND INSTRUMENT ITEMS: Transportation of all types of valves and instrument items (Including special & motor operated valves) from Owner's storage points to contractor's stores/worksite and installation of valves for all rating including assembly of valves accessories, if any, fixing of gaskets bolts/nuts wherever required and performing Positive Material Identification (PMI) using alloy analysers as per specification, drawings and directions of Engineer-in-Charge.				
2.1	FLANGED/WAFER VALVES (UPTO 300#)				
a	NB 2.000 INCHES	Nos.	184.00	682.90	1,25,653.60
b	NB 3.000 INCHES	Nos.	87.00	1,001.60	87,139.20
c	NB 4.000 INCHES	Nos.	43.00	1,274.70	54,812.10
d	NB 6.000 INCHES	Nos.	8.00	1,821.00	14,568.00
e	NB 8.000 INCHES	Nos.	30.00	2,185.20	65,556.00
f	NB 10.000 INCHES	Nos.	3.00	2,731.50	8,194.50
2.2	CONTROL VALVES UPTO 300#				
a	NB 1.000 INCHES	Nos.	3.00	591.83	1,775.49
b	NB 1.500 INCHES	Nos.	6.00	637.40	3,824.40
c	NB 2.000 INCHES	Nos.	6.00	682.90	4,097.40
d	NB 3.000 INCHES	Nos.	3.00	1,274.70	3,824.10
e	NB 6.000 INCHES (REPLACEMENT)	Nos.	3.00	1,821.00	5,463.00
2.3	ON-OFF / SHUTDOWN VALVE UPTO 300#				
a	NB 1.500 INCHES	Nos.	3.00	637.40	1,912.20
b	NB 3.000 INCHES	Nos.	6.00	1,274.70	7,648.20
c	NB 4.000 INCHES	Nos.	3.00	1,638.90	4,916.70

2.4	PRESS. RELIEF/ SAFETY VALVES, PILOT OP. SAFETY VALVES (Size are valve inlet size) UPTO 300#				
a	NB 1.500 INCHES	Nos.	3.00	910.50	2,731.50
b	NB 2.000 INCHES	Nos.	6.00	1,019.80	6,118.80
c	NB 4.000 INCHES	Nos.	3.00	1,456.80	4,370.40
2.5	FLOW INSTRUMENTS				
A	FLOW ELEMENT - ORIFICE				
a	NB 1.500 INCHES	Nos.	3.00	509.90	1,529.70
b	NB 2.000 INCHES	Nos.	3.00	773.93	2,321.79
c	NB 3.000 INCHES	Nos.	3.00	819.60	2,458.80
d	NB 4.000 INCHES	Nos.	3.00	910.50	2,731.50
2.6	FLOW INDICATOR - ROTAMETER				
a	NB 1.500 INCHES	Nos.	3.00	764.82	2,294.46
b	NB 2.000 INCHES	Nos.	3.00	1,019.80	3,059.40
2.7	RESTRICTION ORIFICE				
a	NB (2.000) INCHES	Nos.	3.00	1,019.80	3,059.40
b	NB (4.000) INCHES	Nos.	3.00	910.50	2,731.50
c	NB (8.000) INCHES	Nos.	3.00	1,365.80	4,097.40
3	REINFORCING PADS FOR PIPES :- Fabrication of reinforcing pads for pipe connection wherever required (from pipes only supplied by the Owner) and erection, fitup, welding & testing (including DP/MP) if required of the same as per the specifications, drawings and instructions of the Engineer-in-Charge. Note: Sizes mentioned for Reinforcing Pads are for branch pipe				
3.1	C.S REINFORCING PADS				
a	NB 3.000 INCHES	Nos	3.00	1,912.05	5,736.15
b	NB 4.000 INCHES	Nos	3.00	2,549.40	7,648.20
3.2	C.S IBR REINFORCING PADS				
a	NB 2.000 INCHES	Nos	3.00	1,912.05	5,736.15
3.3	C.S NACE REINFORCING PADS				
a	NB 4.000 INCHES	Nos	3.00	2,731.50	8,194.50
3.4	C.S NACE+HIC REINFORCING PADS				
a	NB 2.000 INCHES	Nos	6.00	1,912.05	11,472.30
b	NB 3.000 INCHES	Nos	3.00	2,367.30	7,101.90
c	NB 4.000 INCHES	Nos	3.00	2,731.50	8,194.50

3.5	REINFORCING PADS FOR PIPES :- Fabrication of reinforcing pads for pipe connection wherever required (from 10mm plate supplied by contractor) and erection, fitup, welding & testing (including DP/MP) if required of the same as per the specifications, drawings and instructions of the Engineer-in-Charge. Note: Sizes mentioned for Reinforcing Pads are header size X branch size pipe					
a	HEADER X BRANCH SIZE 48 INCH X 2 INCH		Nos	3.00	1,912.05	5,736.15
b	HEADER X BRANCH SIZE 40 INCH X 10 INCH		Nos	3.00	6,373.50	19,120.50
c	HEADER X BRANCH SIZE 20 INCH X 8 INCH		Nos	3.00	5,098.80	15,296.40
d	HEADER X BRANCH SIZE 18 INCH X 6 INCH		Nos	3.00	3,824.10	11,472.30
4	RADIOGRAPHY :- Performance of radiographic inspection on piping of all types & thicknesses including providing or hiring of all necessary equipment and whatever else even though not expressly mentioned but required to perform the work as per specifications and instructions of Engineer-in-Charge. Radiographs shall be submitted to the Engineer-in-charge. (Repeat Radiography due to defective radiograph on repaired joints due to Contractor's fault and for additional radiography necessitated due to poor performance of contractor's welders shall be done at contractor's cost) Note: Unit for radiography quantity is "Inch Dia'.					
4.1	FOR JOINTS THK. <= 8MM (FOR CS)					
a	NB 2.000	INCHES	Inch Dia.	500.00	546.30	2,73,150.00
b	NB 3.000	INCHES	Inch Dia.	500.00	819.50	4,09,750.00
c	NB 4.000	INCHES	Inch Dia.	500.00	1,092.60	5,46,300.00
d	NB 6.000	INCHES	Inch Dia.	500.00	1,365.80	6,82,900.00
4.2	FOR JOINTS ABOVE THK. 8MM					
a	NB 8.000	INCHES	Inch Dia.	200.00	1,638.90	3,27,780.00

b	NB 10.000	INCHES	Inch Dia.	10.00	1,912.05	19,120.50
c	NB 16.000	INCHES	Inch Dia.	10.00	3,550.95	35,509.50
5	DYE PENETRATION/MAGNETIC PARTICLE TEST :- Performance of magnetic particle/ dye penetrant test including supply of all necessary materials, equipment and labour for carrying out the work as per specification and directions of Engineer-in-Charge.					
5.1	DYE PENETRATION/MAGNETIC PARTICLE TEST (1.5" and below)		Inch Dia	500.00	54.63	27,315.00
5.2	MAGNETIC PARTICLE TEST (2" and above)		Inch Dia	200.00	54.63	10,926.00
6	PIPE SUPPORTS (FROM MATERIALS SUPPLIED BY OWNER) :- Fabrication, erection(at all elevations) of pipe supports like shoes, cradles, hangers, clamps(of all sizes/thicknesses manufactured by forming method using die), turn buckles, saddles, guides, special supports, pads(including corrosion pads & protection shields), providing and welding of stiffeners as per drawings, T post etc. of all types including supply and application one coat of primer, all necessary equipments, consumables, labour, returning surplus materials and scrap etc to owner's storage points and completing work as per drawings, specifications and instructions of Engineer-in-charge. Modifications/rectifications, if required; and adjustment/ alignment during pre-commissioning, commissioning as per the instructions of Engineer-in-charge.		MT	3.00	58,836.51	1,76,509.53
6.1	DUMMY PIPE SUPPORTS FOR C.S (OWNER SUPPLIED)		MT	1.30	58,836.51	76,487.46
6.2	DUMMY PIPE SUPPORTS FOR S.S (OWNER SUPPLIED)		MT	0.85	1,17,673.02	99,433.70

7	PIPE SUPPORTS (FROM MATERIALS SUPPLIED BY CONTRACTOR) :- Fabrication, erection(at all elevations) of pipe supports like shoes, cradles, hangers, clamps(of all sizes/thicknesses manufactured by forming method using die), turn buckles, saddles, guides, special supports, pads(including corrosion pads & protection shields), providing and welding of stiffeners as per drawings, T post etc. of all types including supply and application one coat of primer, all necessary equipments, consumables, labour, and completing work as per drawings, specifications and instructions of Engineer-in-charge. Modifications/rectifications, if required; and adjustment/ alignment during pre-commissioning, commissioning as per the instructions of Engineer-in-charge.				
7.1	C.S STRUCTURAL STEEL (CONTRACTOR SUPPLIED)	MT	6.50	1,09,387.50	7,11,018.75
7.2	DUMMY PIPE SUPPORTS FOR S.S (CONTRACTOR SUPPLIED)	MT	0.50	3,93,791.25	1,96,895.63
8	STRESS RELIEVING :- Carrying out stress relieving of weld joints on all types of piping as called for on shop/site fabricated already erected system including supply of all materials, consumables recording devices, insulation materials, instruments etc., providing all normal & special equipment and gadgets, skilled/unskilled labour, specialist, supervisory staff and completing the work in all respects as per specifications and instructions of Engineer-in-Charge. Repeat performace due to defective stress relieving or any other account shall be on Contractor's cost (Payment shall be done only after submission and approval of charts. Stress relieving shall be followed by measurement of hardness and no separate payment shall be made for this). Note: Unit for stress relieving quantity is "Inch Dia'.				
a	NB 2.000 INCHES	Nos.	200.00	382.41	76,482.00

b	NB 3.000	INCHES	Nos.	150.00	573.62	86,043.00
c	NB 4.000	INCHES	Nos.	150.00	764.82	1,14,723.00
d	NB 6.000	INCHES	Nos.	100.00	956.03	95,603.00
e	NB 8.000	INCHES	Nos.	100.00	1,174.60	1,17,460.00
f	NB 16.000	INCHES	Nos.	3.00	2,349.09	7,047.27
9	LOW FRICTION PADS: Supply, fabrication and fixing of low friction pads with suitable bonding materials / fasteners, as specified in Drawings / Isometrics / Special support sketches.					
a	TEFLON PAD WITH COMPRESSIVE STRENGTH (0.25 OFFSET) :1870 PSI THICKNESS 5mm		Cu.m	0.00325	21,87,057.42	7,107.94
10	<p>PRE-COMMISSIONING / COMMISSIONING ASSISTANCE : Carrying out Pre-commissioning / Commissioning activities such as dropping the valves, control valves and spool pieces, air and water flushing and air-blasting, steam blowing, air drying, re-installing the valves, control valves and spool pieces, leak testing etc. as per pre-commissioning / commissioning specification/ procedure and instruction of Engineer-in-charge including supply of necessary hand tools, equipments/ machinery, consumables (electrodes, filler wire, gas, card board, target plate, scaffolding etc. wherever required) and with single point responsibility of Contractor's supervision.</p> <p>Note : This manpower will be utilized for Pre-commissioning & Commissioning requirement over and above that already described elsewhere in this SOR. One Man day is 12 hour duty.</p>					
a	SKILLED (WITH HAND TOOLS, EQUIPMENT/		Man day	100.00	1,229.20	1,22,920.00
	MACHINERY, CONSUMABLES)					
b	SEMI SKILLED (WITH HAND TOOLS)		Man day	100.00	1,047.10	1,04,710.00
c	HELPER/ UNSKILLED		Man day	100.00	910.50	91,050.00
d	Supervisor		Man day	100.00	1,329.33	1,32,933.00

11	HYDRO JET CLEANING : Hydro jet cleaning of mill scale, rust, foreign material, grease etc from inside of the erected piping with 20000 PSI Hydro jetting machine, power lance and other accessories as per requirement. All the works required for carrying out the hydro jetting like dropping of valves, plugging of open ends, dewatering to nearest storm water drain etc, complete as per drawings, specifications and Instructions of Engineer In-charge.				
a	NB 0.750 INCHES	Mtr.	200.00	491.70	98,340.00
b	NB 1.000 INCHES	Mtr.	200.00	491.70	98,340.00
c	NB 1.500 INCHES	Mtr.	150.00	491.70	73,755.00
d	NB 2.000 INCHES	Mtr.	500.00	491.70	2,45,850.00
e	NB 3.000 INCHES	Mtr.	200.00	491.70	98,340.00
f	NB 4.000 INCHES	Mtr.	200.00	491.70	98,340.00
g	NB 6.000 INCHES	Mtr.	79.30	491.70	38,991.81
h	NB 8.000 INCHES	Mtr.	200.00	491.70	98,340.00
i	NB 10.000 INCHES	Mtr.	19.50	491.70	9,588.15
j	NB 18.000 INCHES	Mtr.	1.30	983.34	1,278.34
k	NB 40.000 INCHES	Mtr.	1.30	2,549.40	3,314.22
l	NB 48.000 INCHES	Mtr.	1.30	2,913.60	3,787.68
12	"CONCRETE PEDESTALS FOR PIPE SUPPORTS : Construction of reinforced cement concrete pedestal of M30 grade with metal inserts (either for directly grouting the pipe supports or for enabling welding of the support with insert plates)including earth work in excavation in all types of soils,breaking the pavement if required,shuttering,fabrication of metal inserts, reinforcing bars as per requirement and fixing the same while concreting including levelling"	Mtr. Cube	1.30	8,740.80	11,363.04

13	Supply of primer and finish coat, preparation of surfaces and application of primer, identification (Line numbering), lettering etc. as specified including rubdown and touch up of shop primer wherever required, labour, material, tools and tackles, consumables supervision etc. to complete the work in all respects as per Job spec., drawings and direction of Engineer-in-Charge for all types of insulated and un-insulated CS/LTCS/ SS piping as specified including all pipes, fittings, flanges, supports, valves etc. Surface preparation by blast cleaning and application of first coat of primer shall be done in fabrication yard prior to erection. The identification marks of the piping and joints shall be noted before blasting and the same shall be transferred on primed surface with polyurethane paint (F2) or as per the instruction of Engineer-in-Charge. All joints (fabrication as well as erection joints) shall be left unpainted till hydro-testing. Standard Specification of Painting document no. 9680-03-TS-003 to be followed. Refer table 10 and 15 for types of paint system to be used.				
14	PAINTING WITHOUT INSULATION				
A	PIPE				
14.1	NB 0.750 INCHES	Mtr.	300.00	60.10	18,030.00
14.2	NB 1.000 INCHES	Mtr.	150.00	75.60	11,340.00
14.3	NB 1.500 INCHES	Mtr.	150.00	109.30	16,395.00
14.4	NB 2.000 INCHES	Mtr.	700.00	136.60	95,620.00
14.5	NB 3.000 INCHES	Mtr.	300.00	192.12	57,636.00
14.6	NB 4.000 INCHES	Mtr.	300.00	258.60	77,580.00
14.6	NB 6.000 INCHES	Mtr.	50.00	380.60	19,030.00
14.7	NB 8.000 INCHES	Mtr.	200.00	495.31	99,062.00
14.8	NB 16.000 INCHES	Mtr.	31.20	655.60	20,454.72
14.9	NB 30.000 INCHES	Mtr.	300.00	1,650.00	4,95,000.00
14.10	NB 36.000 INCHES	Mtr.	279.00	1,980.00	5,52,420.00
14.11	NB 48.000 INCHES	Mtr.	145.00	2640.00	3,82,800.00
B	VALVES				
14.12	NB: 2 Inches	Nos	1.30	194.90	253.37
14.13	NB: 3 Inches	Nos	1.30	301.40	391.82
14.14	NB: 4 Inches	Nos	1.30	386.96	503.05

14.15	NB: 6 Inches	Nos	2.60	569.97	1,481.92
14.16	NB: 8 Inches	Nos	1.30	682.90	887.77
15	HYDROTESTING OF PROCESS LINES DUE TO HOOKUPS : Scope includes cleaning and flushing by water / compressed air, hydrostatic, pneumatic, vacuum, spark testing and any other type of testing as specified, draining and drying by compressed air, completing all such works in all respects as specified in special condition of contract and as per specifications and instruction of Engineer-in-Charge.	Inch M	4,095.00	183.92	7,53,152.40
16	MODIFICATION/EXTRA WORKS (IF ANY) :- Cutting, bevelling, fitup, welding of different sizes of CS(IBR / NON IBR) /AS/SS piping of all types and thicknesses in shop, in position, on ground/overhead on rack and at all elevations; transportation of pipes, fittings, flanges etc from owner's storage point to work site/ work shop, making necessary scaffoldings, consumables, machinery, tools, tackles, labour and supervision including attending repairs for completing the work as per the instruction of Engineer-in-charge.				
16.1	FLAME CUTTING C.S PIPING ALL TYPES OF PIPING	Inch Dia.	130.00	122.92	15,979.60
16.2	HACKSAW CUTTING C.S PIPING ALL TYPES OF PIPING	Inch Dia.	195.00	184.40	35,958.00
16.3	BEVELLING C.S PIPING ALL TYPES OF PIPING	Inch Dia.	130.00	147.50	19,175.00
16.4	FITUP & WELDING C.S PIPING ALL TYPES OF PIPING	Inch Dia.	195.00	245.84	47,938.80
16.5	FLAME CUTTING S.S PIPING ASME Sec-I/NON ASME Sec-I	Inch Dia.	195.00	98.33	19,174.35
16.6	HACKSAW CUTTING S.S PIPING ASME Sec-I/NON ASME Sec-I	Inch Dia.	195.00	184.39	35,956.05
16.7	BEVELLING S.S PIPING ASME Sec-I/NON ASME Sec-I	Inch Dia.	195.00	159.80	31,161.00
16.8	FITUP & WELDING S.S PIPING ASME Sec-I/NON ASME Sec-I	Inch Dia.	195.00	245.84	47,938.80

17	SPECIALITY ITEMS : Transportation of all types of speciality items from Owner's storage points to contractor's stores/worksite and installation of speciality items for all rating , fixing of gaskets bolts/nuts wherever required and performing Positive Material Identification (PMI) using alloy analysers as per specification, drawings and directions of Engineer-in-Charge.					
17.1	STRAINER (UPTO 300#)					
a	NB 1.500	INCHES	Nos	6.00	182.10	1,092.60
b	NB 4.000	INCHES	Nos	6.00	227.63	1,365.78
c	NB 6.000	INCHES	Nos	3.00	273.15	819.45
17.2	STEAM TRAP (150#)					
a	NB 0.750	INCHES	Nos	12.00	273.15	3,277.80
17.3	STEAM MANIFOLD (150#)					
a	NB 1.500	INCHES	Nos	3.00	409.73	1,229.19
17.4	CONDENSATE MANIFOLD (150#)					
a	NB 1.500	INCHES	Nos	3.00	409.73	1,229.19
17.5	SIGHT GLASS (UPTO 300#)					
a	NB 0.750	INCHES	Nos	12.00	318.64	3,823.68
17.6	SAMPLE BOMB					
a	NB 0.750	INCHES	Nos	9.00	364.20	3,277.80
Total						3,51,60,950