

<b>Unpriced bid format</b> <b>Abstract cost sheet</b>						
<b>Project Name: IOCL Paradip-Standby SRU (525TPD) Train project, Odisha</b>						
<b>Works &amp; Services Name: "Composite Mechanical, Piping, Equipment &amp; Steel Structure works</b>						
<b>Tender Enquiry No.: T0AVX00003, dated:17.01.2022</b>						
<b>Section No</b>	<b>Description</b>	<b>UOM</b>	<b>Qty</b>	<b>Amount in Rs.</b>	<b>Weightage %</b>	<b>Remarks</b>
A	Erection, testing and commissioning of "Mechanical Equipment and Piping" Works	Set	1	₹ 303,890,925.03	92.2421285%	Refer Section-A for detailed BOQ
B	Erection, testing and commissioning of "Mechanical Tie-In and Control Trace" Works	Set	1	₹ 25,558,243.00	7.7578715%	Refer Section-B for detailed BOQ
<b>Total (Excluding Taxes)</b>				₹ 329,449,168.03	<b>100.00%</b>	
	Bidder to confirm having quoted their price in BHEL NIC portal ( <a href="https://eprocurebhel.co.in">https://eprocurebhel.co.in</a> ) in the manner described in Note: 1 below, by writing "QUOTED" here					

Note:

1	Bidders should quote only the percentage excess or less, wrt to the estimated value of Rs.32,94,49,168.03/- in the specified place in BHEL NIC Portal . They should not fill/quote/write anything in col. of Abstract sheet as well as abstract & individual sub sheets of Section- A & B. These rates & amount will be derived from the Total amount quoted (percentage excess or less) or weightage factor assigned against respective items indicated in weightage . (Bidder to quote the total price in BHEL NIC portal <a href="https://eprocurebhel.co.in">https://eprocurebhel.co.in</a> )
2	The rate and amount are inclusive of all applicable taxes, except for the GST. For details of taxes, clause no. 13.0 of the SCC will be applicable.
3	Evaluation Shall be based on total amount quoted by bidder.

### Unprice Bid Format

#### Section A:: Abstract of Price Estimate:: Erection, testing and commissioning of "Mechanical Equipment and Piping" Works

Item No	Description	UOM	Qty	Amount in Rs.	Weightage %	Remark
1	<b>Erection, Testing and Commissioning of Piping system:</b> Receipt from BHEL store, transportation to site, inspection, obtaining statutory approvals/ certificates as applicable, pre-assembly, erection, alignment, welding, NDT, fixing of hangers & supports, chemical cleaning / pickling, oil flushing, water flushing, hydro testing & steam blowing including temporary piping and pumps required for testing, surface finish, supply & application of primer & finish paints of all the pipes including pipe fittings and support structures as per requirement / as given in the drawings including labeling & flow direction on the piping / over insulation & hangers and supports, pre-commissioning, commissioning, trial operation & handing over to customer and supply & application of final painting, etc. for all the piping systems of Standby Sulphur Recovery Unit (SRU) Train Of 525 TPD along with Incinerator and Waste Heat Exchanger, Stack and Interconnecting works for IOCL Paradip Refinery, Odisha, India.	Set	1	₹ 113,934,319.41	37.4918466%	Refer the Section-A1 for the detailed BOQ.
2	<b>Equipment Erection:</b> Erection, Testing, commissioning, trial operation and handing over to customer including receipt, unloading, handling of materials at BHEL stores and transportation to site, supply and application of touch up painting, obtaining statutory approvals/ certificates as applicable of, Reaction furnace package, Incinerator package, Heat exchangers, Vessels, Drums and all other BOS (Balance of Supplies) equipment of Standby Sulphur Recovery Unit (SRU) Train Of 525 TPD along with Incinerator and Waste Heat Exchanger, Stack and Interconnecting works for IOCL Paradip Refinery, Odisha, India.as per technical specifications and approved drawings	Set	1	₹ 105,346,621.92	34.6659322%	Refer the Section-A2 for the detailed BOQ.
3	<b>Erection, Testing and Commmissioning of Contro® Trace Works</b>	Set	1	₹ 1,183,383.70	0.3894107%	Refer the Section-A3 for the detailed BOQ.
4	<b>Erection, Testing and Commmissioning of Insulation Works</b>	Set	1	₹ 3,851,069.74	1.2672539%	Refer the Section-A4 for the detailed BOQ.
5	<b>Expert Manpower for Commissioning Works:</b> Providing expert manpower for commissioning of the total project as per of TCC	Lot	1	₹ 1,855,350.00	0.6105316%	
6	<b>Erection, Testing and Commmissioning of Structural Steel Works:</b> Erection, Testing and commissioning of all structural steel works.	Set	1	₹ 77,720,180.27	25.5750251%	Refer the Section-A6 for the detailed BOQ.
<b>Total (Excluding Taxes)</b>				₹ 303,890,925.03	100.00%	

**Unprice Bid Format**

**Section-A1: Price Estimate: Piping**

Sl.No.	ITEM DESCRIPTION	UOM	QUANTITY	RATE IN RS.	AMOUNT IN RS.	WEIGHTAGE %
<b>1</b>	<b>FABRICATION</b>	Inch Dia	35,682			
<b>1.1</b>	<b>NIBR Piping</b>					
<b>1.1.1</b>	<b>CS Piping Fabrication (Butt Weld), Thickness &lt; 10MM,</b>					
<b>i</b>	Pipe size 2" upto 6"	Inch Dia	3,969	1080.15	₹ 4,287,134.29	3.7628120%
<b>ii</b>	Pipe size 8" upto 14"	Inch Dia	3,248	1080.15	₹ 3,508,342.70	3.0792677%
<b>iii</b>	Pipe size 16" upto 24"	Inch Dia	2,654	1080.15	₹ 2,866,730.76	2.5161258%
<b>1.1.2</b>	<b>CS Piping Fabrication (Fillet Weld), Thickness &lt; 10MM,</b>					
<b>i</b>	Less than < 2"	Inch Dia	1,746	870.42	₹ 1,519,759.98	1.3338913%
<b>ii</b>	Slip-on / Socket Welded Flanges	Inch Dia	19	870.42	₹ 16,538.05	0.0145154%
<b>1.1.3</b>	<b>CS Piping Fabrication (Butt Weld), Thickness &gt; 10 mm &amp; &lt;= 20 mm</b>					
<b>i</b>	Pipe size 2" upto 6"	Inch Dia	401	1280.20	₹ 513,359.51	0.4505750%
<b>ii</b>	Pipe size 8" upto 14"	Inch Dia	107	1280.20	₹ 136,981.22	0.1202282%
<b>iii</b>	Pipe size 16" upto 24"	Inch Dia	637	1280.20	₹ 815,486.31	0.7157512%
<b>iv</b>	Pipe size > 24"	Inch Dia	13,262	1326.97	₹ 17,598,307.37	15.4460109%
<b>1.1.4</b>	<b>SS Piping Fabrication (Butt Weld), Thickness &lt; 10MM</b>					
<b>i</b>	Pipe size 2" upto 6"	Inch Dia	9	2584.82	₹ 23,263.39	0.0204182%
<b>ii</b>	Pipe size 8" upto 14"	Inch Dia	300	2584.82	₹ 775,446.19	0.6806081%
<b>1.1.5</b>	<b>SS Piping Fabrication (Fillet Weld), Thickness &lt; 10MM</b>	Inch Dia		0.00	₹ -	
<b>i</b>	Less than < 2"	Inch Dia	31	2067.86	₹ 64,103.55	0.0562636%
<b>ii</b>	Slip-on / Socket Welded Flanges	Inch Dia	2	2067.86	₹ 4,135.71	0.0036299%
<b>1.2</b>	<b>IBR Piping</b>					
<b>1.2.1</b>	<b>Alloy Steel Piping Fabrication (Butt Weld), Thickness &lt; 10MM,</b>					
<b>i</b>	Pipe size 2" upto 6"	Inch Dia	21	2831.21	₹ 59,455.47	0.0521840%
<b>1.2.2</b>	<b>Alloy Steel Piping Fabrication (Fillet Weld), Thickness &lt; 10MM</b>					

**Section-A1: Price Estimate: Piping**

<b>i</b>	Less than < 2"	Inch Dia	21	2264.97	₹ 47,564.37	0.0417472%
<b>ii</b>	Slip-on / Socket Welded Flanges	Inch Dia	2	2264.97	₹ 4,529.94	0.0039759%
<b>1.2.3</b>	<b>Alloy Steel Piping Fabrication (Butt Weld), Thickness &gt; 10 mm &amp; &lt;= 20 mm</b>					
<b>i</b>	Pipe size 8" upto 14"	Inch Dia	168	3298.44	₹ 554,138.41	0.4863665%
<b>1.2.4</b>	<b>CS Piping Fabrication (Butt Weld), Thickness &lt; 10MM,</b>					
<b>i</b>	Pipe size 2" upto 6"	Inch Dia	1,285	1207.58	₹ 1,551,737.65	1.3619581%
<b>ii</b>	Pipe size 8" upto 14"	Inch Dia	1,535	1207.58	₹ 1,853,632.14	1.6269305%
<b>iii</b>	Pipe size 16" upto 24"	Inch Dia	2,501	1207.58	₹ 3,020,152.43	2.6507838%
<b>1.2.5</b>	<b>CS Piping Fabrication (Fillet Weld), Thickness &lt; 10MM,</b>					0.0000000%
<b>i</b>	Less than < 2"	Inch Dia	631	966.06	₹ 609,585.34	0.5350322%
<b>ii</b>	Slip-on / Socket Welded Flanges	Inch Dia	11	966.06	₹ 10,626.69	0.0093270%
<b>1.2.6</b>	<b>CS Piping Fabrication (Butt Weld), Thickness &gt; 10 mm &amp; &lt;= 20 mm</b>					
<b>i</b>	Pipe size 2" upto 6"	Inch Dia	1,242	1542.46	₹ 1,915,737.13	1.6814399%
<b>ii</b>	Pipe size 8" upto 14"	Inch Dia	1,122	1542.46	₹ 1,730,641.76	1.5189820%
<b>iii</b>	Pipe size 16" upto 24"	Inch Dia	758	1542.46	₹ 1,169,185.79	1.0261928%
<b>1.3</b>	<b>Erection of Pipes for various types of material and thickness</b>					
<b>i</b>	Less than < 2"	Inch Meter	9,394	395.14	₹ 3,711,948.74	3.2579725%
<b>ii</b>	2" upto 6"	Inch Meter	24,694	395.14	₹ 9,757,596.57	8.5642295%
<b>iii</b>	8" upto 14"	Inch Meter	22,947	386.72	₹ 8,874,018.32	7.7887140%
<b>iv</b>	16" upto 24"	Inch Meter	20,205	386.72	₹ 7,813,637.52	6.8580192%

**Section-A1: Price Estimate: Piping**

<b>v</b>	More than > 24"	Inch Meter	46,965	384.18	₹ 18,043,214.01	15.8365048%
<b>2</b>	<b>Valve Erection: all Types</b>					
2.1	Size- Less than 2"	Nos	<b>1,117</b>	878.58	₹ 981,370.25	0.8613474%
2.2	Size-2"	Nos	<b>253</b>	1367.83	₹ 346,062.20	0.3037383%
2.3	Size-3"	Nos	<b>151</b>	1669.08	₹ 252,030.66	0.2212070%
2.4	Size-4"	Nos	<b>98</b>	1973.82	₹ 193,434.32	0.1697770%
2.5	Size-6"	Nos	<b>83</b>	2579.90	₹ 214,131.46	0.1879429%
2.6	Size-8"	Nos	<b>24</b>	4078.69	₹ 97,888.45	0.0859166%
2.7	Size-10"	Nos	<b>29</b>	4944.50	₹ 143,390.50	0.1258537%
2.8	Size-12"	Nos	<b>4</b>	5602.45	₹ 22,409.80	0.0196691%
2.9	Size-14"	Nos	<b>0</b>	0.00	₹ -	0.0000000%
2.10	Size-16"	Nos	<b>7</b>	8018.78	₹ 56,131.48	0.0492665%
2.11	Size-18"	Nos	<b>2</b>	8018.78	₹ 16,037.57	0.0140761%
2.12	Size-20"	Nos	<b>4</b>	8443.96	₹ 33,775.84	0.0296450%
2.13	Size-24"	Nos	<b>2</b>	8826.62	₹ 17,653.24	0.0154942%
2.14	Size-28"	Nos	<b>0</b>	0.00	₹ -	0.0000000%
2.15	Size-30"	Nos	<b>1</b>	15814.05	₹ 15,814.05	0.0138800%
2.16	Size-36"	Nos	<b>4</b>	16323.37	₹ 65,293.49	0.0573080%
2.17	Size-44"	Nos	<b>0</b>	0.00	₹ -	0.0000000%
2.18	Size-48"	Nos	<b>4</b>	16883.62	₹ 67,534.49	0.0592749%

**Section-A1: Price Estimate: Piping**

<b>3</b>	<b>NDT Works</b>					
3.1	Radiography for pipe joints as per specification of various sizees and material	Inch Dia	3,568	300.31	₹ 1,071,564.00	0.9405103%
3.2	Stress Relieving (PWHT) for pipe joints as per specification	Inch Dia	35,000	342.28	₹ 11,979,847.69	10.5146963%
3.3	Ultrasonic Texstig/ MP for pipe joints as per specification	Inch Dia	100	316.62	₹ 31,661.80	0.0277895%
4	Erection/ Installation of Hangers and supports etc. Note: material supplied by BHEL	MT	180.00	25221.28	₹ 4,539,830.96	3.9846036%
5	Erection/ Installation of Temporary Piping for chemical cleaning including supply of materials	MT	20.00	22977.80	₹ 459,556.03	0.4033517%
6	Erection/ Installation of Temporary Piping for steam blowing including supply of materials	MT	20.00	23595.49	₹ 471,909.85	0.4141946%
<b>Total (Excl. Taxes)</b>					<b>₹ 113,934,319.41</b>	<b>100.00%</b>

Unprice Bid Format							
	Section-A2_Price Estimate:: Equipment Erection						
Sl No	Description	UOM	Qty	Rate in Rs.	Amount In Rs.	Weightage %	Remark
1	<p><b>Reaction Furnace Package:</b> Erection, Testing, commissioning, trial operation and handing over to customer including receipt, unloading, handling of materials at BHEL stores and transportation to site, supply and application of touch up painting of following items: Reaction furnace Burner, Reaction Furnace, Waste Heat Exchanger Steam Drum, Waste Heat Exchanger 1st Pass, Waste Heat Exchanger 2nd Pass, TSP Dosing skid</p> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>1. Refractory supply, application and dryout shall be in the scope of supplier. Utilities shall be arranged by erection contractor as per TCC Chapter XX.</li> <li>2. Erection Supervision shall be in the scope of supplier.</li> <li>3. Payment in stages shall be made as per stage payment terms defined in Chapter: X of TCC</li> </ol>	MT	550	₹ 39,363.49	₹ 21,649,921.90	20.5511306%	
2	<p><b>Incinerator Package (Except Stack fabrication and welding):</b> Erection, Testing, commissioning, trial operation and handing over to customer including receipt, unloading, handling of materials at BHEL stores and transportation to site, supply and application of touch up painting of following items: Incinerator burner, Incinerator chamber, Incinerator Fans alongwith motors, Incinerator Waste Heat Exchanger, Incinerator Steam Drum, Incinerator mud Drum, Incinerator Desuperheater, Incinerator stack, TSP Dosing Package (Skid Mounted), Supporting Structures &amp; Platforms</p> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>1. Refractory supply, application and dryout shall be in the scope of supplier. Utilities shall be arranged by erection contractor as per TCC .</li> <li>2. Erection Supervision shall be in the scope of supplier</li> <li>3. Payment in stages shall be made as per stage payment terms defined in Chapter: X of TCC</li> </ol>	MT	768	₹ 39,363.49	₹ 30,231,163.66	28.6968515%	
3	<p><b>Erection, Testing and commissioning Balance of Supplies (BOS) Items:</b> Erection, Testing, commissioning, trial operation and handing over to customer including receipt, unloading, handling of materials at BHEL stores and transportation to site, supply and application of touch up painting of following BOS items:</p> <p>Air Preheaters, condensers, reheaters, coolers, sulphur pit ejectors, Degassing contactors, KO (Konockout) drums, condenser seal pots, waste heat exchanger (WHE) steam drum, WHE mud drum, converters, pumps (Vertical and horizontal both), Chain Pulley Block, Hand Trolley, Scissor Trolley, FDA and FPS package, control valves, on-off valves, de superheater, PSVs etc.</p> <p>(Payment in stages shall be made as per stage payment terms defined in Chapter: X of TCC)</p>	LS	1	₹ 46,702,574.10	₹ 46,702,574.10	44.3322940%	Refer Section A2 (a)
4	<p><b>Incinerator Stack Fabrication, welding, radiography, PWHT at site:</b> Testing and commissioning of Incinerator stack including Fabrication, welding, radiography, touch up painting (Approx 71Mtr Height) as per TCC</p> <p><b>Note:</b></p> <ol style="list-style-type: none"> <li>1. Fabrication, welding, painting shall be carried out in horizontal position at site as per details given in TCC.</li> </ol>	MT	200	₹ 33,814.81	₹ 6,762,962.26	6.4197239%	
	Total Cost (Excluding Taxes)				₹ 105,346,621.92	100.00%	

Unprice Bid Format						
Section A-2(a): Price Estimate: Erection, Testing & Commissioning of BOS items						
Item No	Description	UOM	Qty	Rate in Rs	Amount in Rs.	Weightage %
1	<b>Equipment Erection-Static</b>					
2	Handling and transportation of Rotating Equipment & miscellaneous items of equipment package from Owner's storage points to work site / contractor's stores, assembly of sub-assemblies, field assembly (as applicable) placing the equipment on foundations, (including some amount of cutting, welding & field joints wherever required), levelling, aligning, fixation of foundation bolts, providing (including supply) packing / shim plates (as applicable), including chipping & dressing of foundations, grouting (including supply and application of grout material, equipment base frame filling as per vendor recommendation with specified grout), cleaning and flushing, draining and drying, purging of lines, and providing manpower and tools / equipment for NDT, testing, carrying out trial and start-up runs and testing under supervision of manufacturer's / customer personnel, rectifying defects (if any), insulation (as applicable), precommissioning and commissioning (as applicable) and completing the work in all respects as per drawings, job specifications / scope of work and instructions of Engineer-in-charge for each equipment including drivers and accessories, as listed below. NOTE: (i) Scope also includes erection, fabrication, insulation (as applicable), touch painting, welding & field joints wherever required, installation & NDT of vendor supplied prefabricated spools / commercial length between various skids of an equipment package. (ii) Equipment also include all types of Drums, seal pots etc. (iii) Includes hydrotesting, chemical cleaning all inclusive)					
3	Equipment weighing less than 100 MT but 50 MT and above	MT	112.3	₹ 43,955.03	₹ 4,936,150.08	10.5693319%
4	Equipment weighing less than 50 MT but 30 MT and above	MT	60	₹ 34,642.55	₹ 2,078,552.85	4.4506173%
5	Equipment weighing less than 30 MT but 10 MT and above	MT	79.7	₹ 31,093.45	₹ 2,478,147.79	5.3062338%
6	Equipment weighing less than 10 MT	MT	108.55	₹ 26,058.72	₹ 2,828,674.00	6.0567839%
7	<b>Equipment Erection- Rotating</b>					
8	Handling and transportation of Rotating Equipment & miscellaneous items of equipment package from Owner's storage points to work site / contractor's stores, assembly of sub-assemblies, field assembly (as applicable) placing the equipment on foundations, (including some amount of cutting, welding & field joints wherever required), levelling, aligning, fixation of foundation bolts, providing (including supply) packing / shim plates (as applicable), including chipping & dressing of foundations, grouting (including supply and application of grout material, equipment base frame filling as per vendor recommendation with specified grout), cleaning and flushing, draining and drying, purging of lines, and providing manpower and tools / equipment for NDT, testing, carrying out trial and start-up runs and testing under supervision of manufacturer's / customer personnel, rectifying defects (if any), insulation (as applicable), precommissioning and commissioning (as applicable) and completing the work in all respects as per drawings, job specifications / scope of work and instructions of Engineer-in-charge for each equipment including drivers and accessories, as listed below. NOTE: (i) Scope also includes erection, fabrication, insulation (as applicable), touch up painting, welding & field joints wherever required, installation & NDT of vendor supplied prefabricated spools / commercial length between various skids of an equipment package. (ii) Includes hydrotesting, chemical cleaning all inclusive)					
10	All Types of Pumps (Electric Motor Driven) along with driver, auxiliaries and accessories (Single Skid).	MT	29	₹ 34,519.87	₹ 1,001,076.20	2.1435140%
11	<b>Equipment Erection-Critical</b>					

Item No	Description	UOM	Qty	Rate in Rs	Amount in Rs.	Weightage %
12	<p>Transportation of equipment/equipment internals from owner's storage point to work site, assembly of parts, subassemblies, erection at all elevations, alignment, verticality checking of all loose internals, providing all tools, tackles, machinery, consumables, transportation equipment, erection equipment, instruments, labor, ancillary materials, etc. to complete the work in all respects as per general assembly &amp; other approved fabrication drawings, equipment detail and instructions of the Engineer-in-Charge &amp; supervision of Equipment supplier.</p> <p>1) Complete Equipment/equipment internals.</p> <p>2) Installation of gaskets as applicable.</p> <p>All internals supplied by Equipment/equipment supplier shall be installed by Mechanical contractor inside the Equipment at site under the supervision of Equipment supplier/Equipment internals supplier/Engineer-in-Charge. Charges for supervision shall NOT be quoted by Contractor.</p> <p>Notes: 1) This also includes clearing &amp; removal of all debris / unserviceable materials from site after completion of work &amp; disposal of the same outside plant boundary limit.</p> <p>2) Actual details of internals shall be as per approved drawings and shall be furnished to successful bidder after award of contract. 3) The above scope is applicable for following equipment:</p> <p>3) Includes hydrotesting, chemical cleaning all inclusive)</p>					
13	Erection/Installation of Reactor and Internals of Reactor (088-R-001)	MT	85	₹ 113,666.62	₹ 9,661,662.37	20.6876442%
14	Erection/Installation of Reactor and Internals of Reactor (088-R-002)	MT	85	₹ 113,666.62	₹ 9,661,662.37	20.6876442%
15	Erection/Installation of Degassing Contactot Column and Internals of Column (088-C-001)	MT	35	₹ 113,666.62	₹ 3,978,331.56	8.5184417%
16	Erection/Installation Amine Acid Gas preheater (088-E-001)	MT	16	₹ 35,360.66	₹ 565,770.49	1.2114332%
17	Erection/Installation Air Preheater (088-E-002)	MT	25	₹ 35,360.66	₹ 884,016.39	1.8928644%
18	Erection/Installation 1st Condenser (088-E-003)	MT	40	₹ 35,360.66	₹ 1,414,426.22	3.0285830%
19	Erection/Installation 1st Reheater (088-E-004)	MT	42	₹ 35,360.66	₹ 1,485,147.53	3.1800122%
20	Erection/Installation 2nd Condenser (088-E-005)	MT	40	₹ 35,360.66	₹ 1,414,426.22	3.0285830%

Item No	Description	UOM	Qty	Rate in Rs	Amount in Rs.	Weightage %
21	Erection/Installation 2nd Reheater (088-E-006)	MT	43	₹ 35,360.66	₹ 1,520,508.19	3.2557267%
22	Erection/Installation Final Condenser (088-E-007)	MT	50	₹ 35,360.66	₹ 1,768,032.78	3.7857288%
23	Erection/Installation BFW Preheater (088-E-008)	MT	1.5	₹ 35,360.66	₹ 53,040.98	0.1135719%
24	Erection/Installation Sulphur Cooler (088-E-009)	MT	2.5	₹ 35,290.70	₹ 88,226.75	0.1889120%
25	Erection/Installation Condensate Drum Vent Condenser (088-AC-001)	MT	12.5	₹ 35,360.66	₹ 442,008.19	0.9464322%
26	Erection/Installation Blowdown Cooler (088-AC-002)	MT	8.5	₹ 35,290.70	₹ 299,970.94	0.6423007%
27	Erection/Installation SULFUR PIT EJECTORS (088-EJ-001A/B	MT	1.8	₹ 35,290.70	₹ 63,523.26	0.1360166%
28	<b>Installation of Hook Mounted Chain Pulley Block</b>					
29	Transportation of Equipment from Owner's store/Contractor's store to work site. Assembly of subassemblies, placing the equipment on hook, providing manpower for carrying out trial and start up runs and testing under the supervision guidance of manufacturer/clients- personnel and rectifying defects of any and completing the work in all respects as per drawing, specifications and instructions of engineer in charge for each equipment including accessories. Also refer Scope of work /Job specification attached with the tender.					
30	Chain Pulley Block Capacity- Upto 10 MT	Nos	9	₹ 8,802.10	₹ 79,218.93	0.1696243%
	<b>Total (Excluding taxes)</b>				₹ 46,702,574.10	<b>100.00%</b>

Section A 3-Price estimate:: Contro Trace Works					
Item No	Description	UOM	Qty	Rate(in Rs.)	Amount ( in Rs.)
1	Installation, testing, and commissioning of Contro Trace® bolt on heating system as per BHEL approved drawings, instructions of BHEL site engineer and under supervision of contro trace material supplier (Payment shall be made on the basis of the inch metre measurement of the pipe on which contra trace is installed)	Inch Meter	15000	₹ 78.89	₹ 1,183,383.70

**Unprice Bid Format**

**Section A4-Price Estimate: Insulation Works**

Item No	Description	UOM	Qty	Rate( in Rs.)	Amount(Rs.)	Weightage %
1	<b>Installation, testing and commissioning of Insulation and dismantling of existing insulation, steam tracing pipelines.</b>					
1.1	Installation of insulation (This is inclusive of the mineral wool, , insulation auxiliaries and consumables)	MT	120	₹ 16,319.58	₹ 1,958,349.75	50.8520977%
1.2	Installation of Aluminium cladding including all hardware	MT	80	₹ 23,659.00	₹ 1,892,719.99	49.1479023%
	<b>Total (Excl taxes)</b>				₹ 3,851,069.74	100.00%

Unprice Bid Format								
Section-A6_Price Estimate:: Structural steel and associated works								
Sl.No	MSR ST.No.	Item Description	UOM	QTY.	Rate(in rs.)	Amount(in Rs.)	Weightage%	
1	215	Dismantling concrete work for all types of structures at all levels including stacking of servicable material to a lead of 500 m and disposal of unservicable material upto a lead of 2 km, cutting of reinforcement, labour, equipment, safety precautions etc all complete as per drawings, specification and instructions of engineer in charge.						
2	a	Plain cement concrete of all grades	CUM	10	₹ 1,335.39	₹ 13,353.85	0.017182%	
3	b	Reinforced cement concrete of all grades	CUM	50	₹ 1,936.49	₹ 96,824.43	0.124581%	
4	800	<b>GROUTING:</b> Grouting including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, roughening surface, cleaning, ramming, curing etc. at all level , drawings and as directed by engineer - in - charge.					0.000000%	
5	802	Providing & grouting of pocket holes, pipe sleeves under base plates, machinery, pipe supporting structures etc. with mix 1:1 (1 cement :1 sand ) using non shrink admixture etc. all Complete.	CUM	1	₹ 19,369.69	₹ 19,369.69	0.024922%	
6	803	Providing & grouting of pocket holes, pipe sleeves and under base plate of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing etc. all complete with mix 1:1:2 (1 cement : 1 coarse sand : 2 aggregate of 6 mm down graded stonechips ) using non shrink admixture as per specification, drawing and direction of engineer-in-charge. (Cost of all material and cleaning the pocket by compressed air shall be in the scope of the contractor).	CUM	1	₹ 18,177.08	₹ 18,177.08	0.023388%	
7	804	Providing & grouting of pocket holes, pipe sleeves and under base plates of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing etc. all complete with ConbextraGP-1 or equivalent as per specification, drawing and direction of engineer-in-charge. (Cost of all material and cleaning of the pockets by compressed air shall be in the scope of the contractor).	CUM	4	₹ 43,610.59	₹ 174,442.35	0.224449%	
8	805	Providing & grouting of pocket holes, pipe sleeves and under base plates of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing, etc. all complete with Conbextra GP-2 or equivalent as per specification, drawing and direction of engineer-in-charge.(Cost of all material and cleaning of the pockets by compressed air shall be in the scope of the contractor).	CUM	2	₹ 46,986.84	₹ 93,973.69	0.120913%	
9	1500	<b>ROOFING / SIDE CLADDING:</b> Roofing / side cladding work including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, scaffolding, laps, hooks, washers, corner pieces etc. at all level as per specification, drawings and as directed by engineer - in - charge.					0.000000%	
10	1504-A	Designing, providing and fixing External sheet of Permanent colour coated metal cladding with troughed M.S. sheets of 0.8mm bare metal thickness having minimum yield strength 250 MPa and zinc-aluminium alloy coating not less than 275 gm/sqm total on both sides including fixing to supports / rails by concealed fixing system, corrosion resistant self tapping / self drilling type fasteners with suitable cap, flashing etc. all complete. The exposed face of the sheet shall be permanently colour coated with Polyfluro Vinyl Coating (PVF2) of minimum dry film thickness (DFT) 20 microns over suitable primer. Inner face of the sheet shall be provided with suitable pre-coating of minimum DFT 7 microns over suitable primer. The permanent colour coated sheet shall meet the general requirements of IS : 14246 and shall conform to class 3 for the durability.	Sqm	20	₹ 1,243.98	₹ 24,879.54	0.032012%	
11	2300	<b>STRUCTURAL WORKS:</b> Structural steel works including all labour, material (unless otherwise specified in BOQ/contract specification), equipments unless otherwise specified, transportation, handling etc. at all level as per specification, drawings and as directed by engineer - in - charge.					0.000000%	

Sl.No	MSR ST.No.	Item Description	UOM	QTY.	Rate(in rs.)	Amount(in Rs.)	Weightage%
12	2301-A	Supply, Fabrication,erection and alignment of structural steel of Grade E250 quality BR / B0 rolled section / built up section / combination of both conforming to IS:2062, pipes of grade Yst 310 conforming to IS:1161/ IS:1239, chequered plate conforming to IS: 3052, mild steel rounds, monorails, stays, safety chains, ladders, MS grating etc. in columns, beams, gantry girders, bunkers, silos, hoppers, roof trusses, portals, laced purlins, space frames, hangers, struts, monorails, galleries, stiffeners, wall beams, sheeting runners, brackets, stub columns, bracings, cleats, trestles, base plates, splice plates, chequered plate flooring, decking and seal plates, steel frame grid over false ceiling, walkway platforms, ladders, stairs, stringers, treads, landings, hand-rails etc including 2 coats of red oxide zinc-chromate primer (one coat at shop and one coat after erection), connection design & preparation of fabrication drgs, collection of steel from stores, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment, erection bolts & nuts (weight of erection bolts, nuts and welds not payable), assembly, edge preparation, preheating (min preheat and interpass temperature of 200 C for welding over 20 mm and upto 40 mm & 660 C for welding over 40 mm and upto 63 mm & 1100 C for thickness over 63 mm & use of low hydrogen/ radiogenic electrodes), post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme, protection against damage in transit, stability of structures, installation of temporary structures, setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 part 1, touchup painting, rectification, dismantling and removal of all temporary structures (weight of temporary structures not payable), return of surplus / waste steel materials to store etc all complete. Including appointment of a seperate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL.	MT	50	₹ 112,204.48	₹ 5,610,224.03	7.218491%
13	2301-B	Supply, Fabrication,erection and alignment of structural steel of tubular/ hollow steel sections shall be of grade yst 310 conforming to is:1161 (for circular hollow sections (chs)) & conforming to is:4923 (for rectangular hollow sections (rhs)/ square hollow sections (shs)), mild steel rounds, monorails, stays, safety chains, ladders, MS grating etc. in columns, beams, gantry girders, bunkers, silos, hoppers, roof trusses, portals, laced purlins, space frames, hangers, struts, monorails, galleries, stiffeners, wall beams, sheeting runners, brackets, stub columns, bracings, cleats, trestles, base plates, splice plates, chequered plate flooring, decking and seal plates, steel frame grid over false ceiling, walkway platforms, ladders, stairs, stringers, treads, landings, hand-rails etc including 2 coats of red oxide zinc-chromate primer (one coat at shop and one coat after erection), connection design & preparation of fabrication drgs, collection of steel from stores, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment, erection bolts & nuts (weight of erection bolts, nuts and welds not payable), assembly, edge preparation, preheating (min preheat and interpass temperature of 200 C for welding over 20 mm and upto 40 mm & 660 C for welding over 40 mm and upto 63 mm & 1100 C for thickness over 63 mm & use of low hydrogen/ radiogenic electrodes), post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme, protection against damage in transit, stability of structures, installation of temporary structures, setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 part 1, touchup painting, rectification, dismantling and removal of all temporary structures (weight of temporary structures not payable), return of surplus / waste steel materials to store etc all complete. Including appointment of a seperate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL.	MT	20	₹ 112,204.48	₹ 2,244,089.61	2.887396%
14	2301-C	Taking delivery of structural elements from BHEL stores / store yard, loading, transportation, unloading, Erection and alignment of structural steel of Grade E250 quality BR / B0 rolled section / built up section / combination of both conforming to IS:2062, pipes of grade Yst 310 conforming to IS:1161/ IS:1239, chequered plate conforming to IS: 3052, mild steel rounds, monorails, stays, safety chains, ladders, MS grating etc. in columns, beams, gantry girders, bunkers, silos, hoppers, roof trusses, portals, laced purlins, space frames, hangers, struts, monorails, galleries, stiffeners, wall beams, sheeting runners, brackets, stub columns, bracings, cleats, trestles, base plates, splice plates, chequered plate flooring, decking and seal plates, steel frame grid over false ceiling, walkway platforms, ladders, stairs, stringers, treads, landings, hand-rails etc all complete for all levels, as specified and directed.	MT	1300	₹ 24,569.21	₹ 31,939,968.06	41.096107%
15	2302-A	Extra over ST NO. 2301-A & 2301-B for blast cleaning of steel structures to near white metal surface (Sa 2 1/2 ) and Two component Inorganic Zinc Silicate coating of miniumm 75 micron (DFT) at shop, instead of primer coat of red oxide zinc-chromate, including touch-up painting etc all complete.	MT	70	₹ 7,450.02	₹ 521,501.40	0.670999%

Sl.No	MSR ST.No.	Item Description	UOM	QTY.	Rate(in rs.)	Amount(in Rs.)	Weightage%
16	2305-A	Providing and applying High Build Epoxy finish coating cured with polyamine hardener of 150 micron at shop and two component Acrylic – Polyurethane finish paint (35 micron at shop & 40 micron at field) over approved make over primer and shade to achieve an even shade (Total DFT 300 micron) including protection and cleaning, scaffolding etc. all complete as per Sl.no. 1.2 table-01 of 080557C-000-JSD-2300-001_C.	MT	70	₹ 4,242.52	₹ 296,976.25	0.382110%
17	2305-B	Providing and applying two component Acrylic – Polyurethane finish paint (40 micron at field) over already painted surface (Total DFT 260 micron) to achieve an even shade (Total DFT 300 micron) including protection and cleaning, scaffolding etc. all complete as per Sl.no. 1.2 table-01 of 080557C-000-JSD-2300-001_C.	MT	1300	₹ 2,262.68	₹ 2,941,479.02	3.784704%
18	2307	Supplying, fabrication, erection and alignment of factory made electroforged galvanised grating units with mild steel having minimum galvanisation conforming to IS:2062 in flooring, platforms, drain and trench covers, walk-ways, passages, staircases with edge binding strips and anti-skid nosing in treads etc. including fixing clamps, fittings, fixtures, all taxes, duties, packing, grinding, drilling, welding, edge preparation, etc. all complete.					0.000000%
19	b	Minimum galvanisation of 900 g/sqm	MT	175	₹ 142,172.34	₹ 24,880,159.33	32.012483%
20	2312-A	Providing and fixing in positng of High Strength Structural Steel Bolts of Property Class 8.8 (minimum) conforming to IS:3757 & IS:4000 up to and inclusive of 39 mm diameter and upto 300 mm long, Hexagonal Nuts conforming to IS:6649 and Washers conforming to IS:6649. All Bolts, Nuts and Washers shall be Hot Dip Galvanized shall confirm to IS: 4759 for structural steel work etc all complete.	KG	1000	₹ 164.37	₹ 164,373.57	0.211494%
21	2312-B	Providing and fixing in positng of High Strength Structural Steel Bolts of Property Class 10.9 conforming to IS:3757 & IS:4000 up to and inclusive of 39 mm diameter and upto 300 mm long, Hexagonal Nuts conforming to IS:6649 and Washers conforming to IS:6649. All Bolts, Nuts and Washers shall be Hot Dip Galvanized shall confirm to IS: 4759 for structural steel work etc all complete.	KG	10	₹ 180.81	₹ 1,808.11	0.002326%
22	2313	Dismantling of steel structure, lowering of material and carriage of the dismantled material up to field fabrication shop / projects storage including temporary dismantling, cutting, re-welding, supporting, and restoring to correct position all temporarily dismantled members, re- alignment of all adjacent connected members to their correct positions ( weight of such adjacent members and temporarily dismantled members not payable), scaffolding, staging, tools & tackles, gas cutting, welding, consumables etc all complete.	MT	50	₹ 9,417.49	₹ 470,874.69	0.605859%
23	2313-A	Dismantling GI/asbestos/translucent sheets, ridges, gutters etc. (taking all necessary safety precautions) in barricading, roofings and wall claddings, including supply of all tools & tackles, necessary scaffolding, consumables, cutting (by flame or saw) of fixing hooks, transporting and stacking the serviceable materials, cleaning the site and disposal of the unserviceable material to spoil heaps anywhere within the plant boundary, all complete for all levels, as specified and directed.	SQM	2950	₹ 154.73	₹ 456,441.28	0.587288%
24	2314	Addition to, alterations in and/or modification of "Erection Marks" including cutting of parts, gauging of welds, cutting, grinding, fabrication, welding, drilling holes, straightening, removal of bends, raising to the required level, painting, transportation, return of unutilised steel pieces to the project store, temporarily dismantling, cutting, re-welding, supporting and restoring to correct position of all the temporarily dismantled members, realignment of adjacent connected members (weight of such temporarily dismantled and adjacent members not payable) etc all complete for the following:					0.000000%
25	a	In erected position	MT	50	₹ 22,476.09	₹ 1,123,804.40	1.445962%
26	b	In fabrication yard	MT	25	₹ 19,152.34	₹ 478,808.58	0.616067%
27	2322	Supply, fabrication and fixing of GI pipe hand railing (1000 mm high) of 32 mm/40 mm dia (Medium Grade) including transportation, loading/unloading, painting etc. all complete as per specifications.	MT	50	₹ 122,973.03	₹ 6,148,651.31	7.911267%
		Total (Excluding taxes)				₹ 77,720,180.27	100.00%

Unprice Bid Format							
Project Name: IOCL Paradip-Standby SRU (525TPD) Train project, Odisha							
Section-B: Erection, testing and commissioning of "Mechanical Tie-In and Contro Trace" Works							
ABSTRACT OF PRICES							
Sl No	Description	UOM	Qty	Rate(in Rs.)	Amount(in Rs.)	Weightage %	Remarks
1	Erection, testing and commissioning of Mechanical Tie-In Works	Set	1	₹ 18,036,500	₹ 18,036,500	70.5701850%	Refer Section-B1 for detailed BOQ
2	Miscellaneous Works: Dismantling of insulation and piping. Installation of insulation. Structure Erection.	Set	1	₹ 2,400,564	₹ 2,400,564	9.3925242%	Refer Section-B2 for detailed BOQ
3	Erection of Contro Trace Works	Set	1	₹ 2,761,229	₹ 2,761,229	10.8036715%	Refer Section-B3 for detailed BOQ
4	Supply and erection of Scaffolding with access ladder	Set	1	₹ 2,359,951	₹ 2,359,951	9.2336193%	Refer Section-B4 for detailed BOQ
	<b>Total (Excluding Taxes)</b>				₹ 25,558,243	100.0000000%	

## Unprice Bid Format

Section-B1:: Price Estimate:: Erection, testing and commissioning of Mechanical Tie-In Works						
Item SI No	Item Description	UOM	Qty	Rate (in Rs.)	Amount (in Rs.)	Weightage %
1.0	<p><b>"The scope of work including but not limited to following within quoted rates.Preparation for execution of Tie-in points during shut down includes drawing free issue materials, prefabrication, necessary NDT, erection, supporting if required, carry out radiography etc by supplying tools &amp; tackles, supply of skilled and unskilled manpower &amp; consumables etc. Complete in all aspects — as per tie in point list &amp; instructions of Engineer—in charge.</b></p> <p><b>Contractor to consider execution during shutdown time work shall be executed on 24 X 7 basis</b></p>					
1.1	CS-NIBR, TIE-INS - UP TO 8"	Inch Dia	570.75	₹ 6,283	₹ 3,586,230.23	19.8831831%
1.2	CS-NIBR, TIE-INS - SIZE >8" TO <=12"	Inch Dia	614.25	₹ 4,216	₹ 2,589,760.46	14.3584428%
1.3	CS-NIBR, TIE-INS - SIZE > 12" TO <=16"	Inch Dia	326.25	₹ 4,091	₹ 1,334,700.32	7.3999964%
1.4	CS-NIBR, TIE-INS - SIZE > 16" TO <=20"	Inch Dia	78	₹ 3,573	₹ 278,716.15	1.5452896%
1.5	CS-NIBR, TIE-INS - SIZE >20" TO <=24"	Inch Dia	234	₹ 3,353	₹ 784,691.60	4.3505759%
1.6	CS-NIBR, TIE-INS - SIZE >32" TO <=48"	Inch Dia	1383	₹ 3,073	₹ 4,249,730.26	23.5618350%
1.7	CS-IBR, TIE-INS - UP TO 8"DIA	Inch Dia	190.25	₹ 6,616	₹ 1,258,688.91	6.9785654%
1.8	CS-IBR, TIE-INS - SIZE > 12" TO <=16"	Inch Dia	108.75	₹ 4,257	₹ 462,968.93	2.5668447%
1.9	SS-NIBR TIE-INS UP TO 8"	Inch Dia	178	₹ 14,544	₹ 2,588,874.37	14.3535300%
1.10	CS-IBR, TIE-INS - SIZE >8" TO <=12"	Inch Dia	204.75	₹ 4,406	₹ 902,138.29	5.0017371%
	<b>Total (Excl. Taxes)</b>				<b>₹ 18,036,500</b>	100.00%

Unprice Bid Format							
Section-B2-Price Estimate: Miscellaneous Works: Dismantling of insulation and piping. Installation of insulation. Structure Erection.							
Sl No	Item Sl. No.	Description	UOM	Qty	Rate(in Rs.)	Amount(in Rs.)	Weightage %
A	1.0	Receipt from BHEL store, transportation to site, Erecting in position bolted and / or welded STRUCTURAL STEEL WORKS (IS 2062/grade E250-BR) like angles, channels, beams, plates, pipes, tubes, etc. including tools, tackles, & assembly bolts, sag rods, permanent bolts of grade 8.8 including all built-up sections/ compound sections made out of rolled sections and / or plates / bent plates for steel structures, Pipe rack, Pipe Bridge, T post, shed, staircase, platforms, structural pipe supports, MT rungs, welding nuts for fire proofing, other types of structures, etc. complete & as directed by Engineer-in-Charge. Note :- 1) All structural steel will be free supply to bidder at site/storage yard. contractor to check transport the same at work place.					
	1.1	Structures	MT	6.00	₹ 21,316.26	₹ 127,897.56	5.3278124%
	1.2	Providing and applying two component Acrylic – Polyurethane finish paint (40 micron at field) over already painted surface (Total DFT 260 micron) to achieve an even shade (Total DFT 300 micron) including protection and cleaning, scaffolding etc. all complete as per Sl.no. 1.2 table-01 of 080557C-000-JSD-2300-001_C.	MT	6.00	₹ 9,226.12	₹ 55,356.74	2.3059889%
	<b>Total for 1 (Excl taxes)</b>					<b>₹ 183,254</b>	
B	2.0	<b>Installation, testing and commissioning of Insulation and dismantling of existing insulation, steam tracing pipelines.</b>					
1	2.1	Removal, disposal of existing piping insulation as per BHEL/ IOCL instructions (This is inclusive of the existing mineral wool, Cladding, insulation auxiliaries)	MT	40	₹ 20,371.14	₹ 814,845.69	33.9439246%
	2.2	Removal, disposal of existing steam tracing piping as per BHEL/ IOCL instructions	MT	25	₹ 16,296.91	₹ 407,422.85	16.9719623%
2	2.3	Installation of insulation (This is inclusive of the mineral wool, insulation auxiliaries and consumables)	MT	15	₹ 16,603.35	₹ 249,050.31	10.3746576%
3	2.4	Installation of Aluminium cladding including all hardware	MT	25	₹ 24,138.93	₹ 603,473.26	25.1388097%
	<b>Total for 2 (Excl taxes)</b>					<b>₹ 2,074,792</b>	
	3.0	<b>Supply, erection, testing and commissioning of the following gate valves:</b>	UOM	Qty			
	3.1	Size: 2", VMS : 513 FE	Nos	2	₹ 13,225.91	₹ 26,451.81	1.1018997%
	3.2	Size: 3", VMS : 513 FE	Nos	3	₹ 25,364.96	₹ 76,094.87	3.1698742%
	3.3	Size: 4", VMS : 513 FE	Nos	1	₹ 39,971.09	₹ 39,971.09	1.6650705%
	<b>Total 3 (Excluding Taxes)</b>					<b>₹ 142,518</b>	
	<b>Grand Total (1+2+3) (Excl. taxes)</b>					<b>₹ 2,400,564</b>	<b>100.00%</b>

Unprice Bid Format						
Section B3-Price estimate:: Erection of Contro Trace Works						
Item Sl. No	Description	UOM	Qty	Rate (in Rs.)	Amount (in Rs.)	Weightage%
1.0	Installation, testing, and commissioning of Contro Trace® bolt on heating system as per BHEL approved drawings, instructions of BHEL site engineer and under supervision of contro trace material supplier (Payment shall be made on the basis of the inch metre measurement of the pipe on which contra trace is installed)	Inch Meter	35000	₹ 78.89	2,761,228.63	100%

**Unprice Bid Format**

**Section-B4:: Price Estimate: Supply and erection of Scaffolding with access ladder**

<b>Item Sl No</b>	<b>Description</b>	<b>UOM</b>	<b>Qty</b>	<b>Rate (in Rs.)</b>	<b>Amount(in Rs.)</b>	<b>Weightage %</b>
1.0	Scaffolding with access ladder for grade level above 12 meter level	Cum	8640	₹ 96	₹ 826,229	35.0104287%
2.0	Scaffolding with access ladder for grade level above 12 meter level upto 24 meter level	Cum	8640	₹ 111	₹ 957,931	40.5911548%
3.0	Scaffolding with access ladder for grade level above 24 meter level	Cum	4320	₹ 133	₹ 575,791	24.40%
	<b>Total (Excluding Taxes)</b>				<b>₹ 2,359,951</b>	100%