RATE CONTRACT
FOR
CHAIN PULLEY BLOCKS

TECHNICAL SPECIFICATION

PE-TS-RC-563-A101

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR- PROJECT ENGINEERING MANAGEMENT
NOIDA
INDIA

	TECHNICAL SPECIFICATION FOR RATE CONTRACT OF CHAIN PULLEY BLOCKS INDEX	SPECIFICATION No: PE-TS-RC-563-A101
		REV. 00 / DATE: MAR 2019
		SHEET : 1 OF 1

SECTION-IA

INTENT OF SPECIFICATION

SCOPE OF ENQUIRY

1.1 The specification is intended to cover design (i.e. preparation and submission of drawing /documents including "As Built" drawings and O&M manuals), engineering, manufacture, fabrication, assembly, inspection / testing at vendor's & sub-vendor's works, painting, maintenance tools & tackles fill of lubricants & consumables, ESSENTIAL spares (if applicable) forwarding, proper packing, shipment and delivery at site for project and package specified above complete with all accessories for the total scope defined as per BHEL NIT & tender technical specification PE-TS-RC-563-A101, in line with drawings/ documents/ test procedures approved by BHEL/ Customer for chain pulley blocks as in different sections / volumes of this specification.

1.2 The contractor shall be responsible for providing all material, equipment & services, which are required to fulfil the intent of ensuring operability, maintainability, reliability and complete safety of the complete work covered under this specification, irrespective of whether it has been specifically listed herein or not. **Omission of specific reference to any component / accessory necessary for proper performance of the equipment shall not relieve the contractor of the responsibility of providing such facilities to complete the supply of CHAIN PULLEY BLOCK.**

1.3 It is not the intent to specify herein all the details of design and manufacture. However, the equipment shall conform in all respects to high standards of design, engineering and workmanship and shall be capable of performing the required duties in a manner acceptable to purchaser who will interpret the meaning of drawings and specifications and shall be entitled to reject any work or material which in his judgement is not in full accordance herewith.

1.4 The extent of supply under the contract includes all items shown in the drawings, notwithstanding the fact that such items may have been omitted from the specification or schedules. Similarly, the extent of supply also includes all items mentioned in the specification and /or schedules, notwithstanding the fact that such items may have been omitted in the drawing.

1.5 The general term and conditions, instructions to tenderer and other attachment referred to elsewhere are made part of the tender specification. The equipment materials and works covered by this specification is subject to compliance to all attachments referred to in the specification. The bidder shall be responsible for and governed by all requirements stipulated herein.

1.6 While all efforts have been made to make the specification requirement complete & unambiguous, it shall be bidders' responsibility to ask for missing information , ensure completeness of specification, to bring out any contradictory / conflicting requirement in different sections of the specification and within a section itself to the notice of BHEL and to seek any clarification on specification requirement in the format enclosed under Vol-III of the specification **within 10 days of receipt of tender documents.** In absence of any such clarifications, in case of any contradictory requirement, the more stringent requirement as per interpretation of Purchaser/Customer shall prevail and shall be complied by the bidder without any commercial implication on account of the same. Further in case of any missing information in the specification not brought out by the prospective bidders as part of pre-bid clarification, the same shall be furnished by Purchaser/ Customer as and when brought to their notice either by the bidder or by purchaser/ customer themselves. However, such requirements shall be binding on the successful bidder without any commercial & delivery implication.

1.7 The bidder's offer shall not carry any sections like clarification, interpretations and /or assumptions.

1.8 Deviations, if any, should be very clearly brought out clause by clause in the enclosed deviation schedule along with cost of withdrawal; otherwise, it will be presumed that the vendor's offer is strictly in line with NIT specification. If no cost of withdrawal is given against the deviation, it will be presumed that deviation can be withdrawn without any cost to BHEL/its customer.

1.9 In the event of any conflict between the requirements of two clauses of this specification documents or requirements of different codes and standards specified, Section -I shall prevail over section – II, however more stringent requirement as per the interpretation of the owner shall apply.

1.10 In case all above requirements are not complied with, the offer may be considered as incomplete and would become liable for rejection.

1.11 Unless specified otherwise, all through the specification, the word contractor shall have same meaning as successful bidder /vendor and Customer/ Purchaser/Employer will mean BHEL and /or END CUSTOMER including their consultant as interpreted by BHEL in the relevant context. For details refer the relevant clause in GCC.

SECTION-IB

PROJECT INFORMATION

(PROJECT SPECIFIC)

SECTION – IC

SPECIFIC TECHNICAL REQUIREMENT

1.0 SCOPE OF WORK

1.1 The specification is intended to cover design (i.e. preparation and submission of drawing /documents including "As Built" drawings and O&M manuals), engineering, manufacture, fabrication, assembly, inspection / testing at vendor's & sub-vendor's works, painting, maintenance tools & tackles fill of lubricants & consumables, ESSENTIAL spares (if applicable) forwarding, proper packing, shipment and delivery at site as required on FOR site basis, demonstration test at vendor's works (as mentioned elsewhere in the specification) of **CHAIN PULLEY BLOCK** as per details in different sections / volumes of this specification.

1.2 The equipment to be furnished by the bidder for the chain pulley blocks of different capacity and lift as specified in price format along with all accessories including essential spares (as applicable) and tools and tackles. However, actual requirement of CPBs shall be informed to bidder during project specific enquiry/ PO.

1.3 The chain pulley blocks offered shall have technical parameters as per the Data Sheet A enclosed herewith in section I, sub-section –ID

1.4 Any equipment/accessories not specified herein but required to make the equipment complete and efficient shall also be under bidder's scope of work.

The following shall be in the bidder's scope of work.

a. Chain pulley blocks with/without traveling trolleys as per price format.
b. Maintenance Tools and Tackles as given at 4.0
c. Packaging.
d. O&M manuals, drawings and documents etc.
e. Essential spares (project specific)
f. Inspection & testing of Chain Pulley Blocks as per QAP approved by BHEL /Customer during detail engineering. Prime inspection agency shall be BHEL / End Customer. Equipment being supplied shall be strictly in accordance with nomenclature & technical specification.

2.0 TESTING AND INSPECTION

Refer section I, sub-section IC

3.0 WORKS EXCLUDED

3.1 Supply of ISMB/ monorail for traveling trolley of chain pulley blocks shall be under scope of BHEL/CIVIL contractor.

4.0 MAINTENANCE TOOLS AND TACKLES

A complete unused one set of special purpose maintenance tools & tackles and accessories along with detailed instructions for maintenance and operation shall be supplied. Tools shall be of suitable sizes for maintenance of Chain Pulley Block of each type and capacity. Each tool and wrench shall be stamped so as to be identified easy for its use and size. The tools shall be supplied in steel toolbox and with a copy of instruction manual. The items supplied shall be of the best quality, specially protected against rusting. The following shall be provided as minimum requirement.

i.	Adjustable spanner	One (1)
ii.	Wrench spanner	One (1)
iii.	Oil gun	One (1)
iv.	Set of Screw driver	Min 6 nos. (of different sizes suiting various types and capacities of Chain Pulley Blocks)
v.	2 lb hammer with wooden handle	One (1)
vi..	Grease Gun	One (1)

Note: All maintenance tools & tackles are to be supplied in a tool box.

Any other item required for maintenance shall also be provided.

5.0 ESSENTIAL SPARES: -

Refer Annexure II

6.0 DRAWINGS/DESIGN DOCUMENTS FOR SUBMISSION (during detailed engineering)

A. For Approval

a. G.A. drawing showing clearances, assembly, cross section details, materials of construction, lifts & approaches etc.
b. Quality plan
c. Test certificates & reports on various shop tests (For verification only)

For details refer section II, Annexure IV

7.0 DEVIATIONS

7.1 If the offer submitted has got any deviations from technical specification in the tender document. Bidder shall tabulate the same in the 'Deviation sheet (cost of withdrawal)" format furnishing full particulars of such deviations. Deviations are to be furnished with mention to specific clause numbers notes/ comments e.g. "Refer to forwarding letter" etc. is not acceptable. Cost of withdrawal of deviations to be put against each deviation.

7.2 If there are no deviations from the tender document, bidder shall indicate so in deviation format.

7.3 Reasons/explanations for such deviations shall be furnished.

8.0 DEMONSTRATION TEST

8.1 The chain pulley blocks along with other accessories shall be demonstrated for the rated capacity. Inspection & testing shall be as per section IC, section-I

8.2 The bidder shall have full responsibility for the safe and efficient operation of the chain pulley blocks and traveling trolley with associated accessories as a single unit.

8.3 If the shop performance tests indicate the failure of any of the components to achieve the functional performance, the deficiency shall be made good at bidder's cost.

8.4 Demonstration test shall be carried out each time after the rectification modification is carried out.

9.0 PACKING

Packing shall be for normal environment in wooden box.

10.0 SCOPE OF SUPPLY

Sl no.	Details of Works or Equipment/System	Qty. (No.)
1	CPB with travelling trolley 1Ton, 6.0 M lift. (non-hazardous area)	58
2	CPB with travelling trolley 2Ton, 6.0 M lift. (non-hazardous area)	14
3	CPB with travelling trolley 3Ton, 6.0 M lift. (non-hazardous area)	1
4	CPB with travelling trolley 5Ton, 6.0 M lift. (non-hazardous area)	1
5	CPB without travelling trolley 1Ton, 6.0 M lift. (non-hazardous area)	58
6	CPB without travelling trolley 2Ton, 6.0 M lift. (non-hazardous area)	29
7	CPB without travelling trolley 3Ton, 6.0 M lift. (non-hazardous area)	45
8	CPB without travelling trolley 5Ton, 6.0 M lift. (non-hazardous area)	32
9	CPB without travelling trolley 8 Ton, 6.0 M lift. (non-hazardous area)	1
10	CPB without travelling trolley 10Ton, 6.0 M lift. (non-hazardous area)	12
11	CPB with travelling trolley 2Ton, 6.0 M lift. (Hazardous area)	4
12	Maintenance tools and tackles for CPB upto 3T capacity	1
13.	Maintenance tools and tackles for CPB above 3T capacity	1
14	Essential spares (refer annexure-II of the specification PE-TS-RC-563-A101)	1

QUALITY ASSURANCE

Chain pulley blocks shall be inspected and tested as per standard quality plan enclosed. Any additional inspection & testing requirement / CHP (customer's hold point) deemed necessary by customer/BHEL during detailed engineering shall also be complied with without any commercial or delivery implication.

Chain pulley block shall be completely assembled at manufacturer's works and minimum following tests shall be conducted at works

a) Over load test
b) Rated load test
c) Other tests as per IS-3832.

The scope of inspection & testing shall include but not limited to the following:

a) Material identification / co-relation for important items like hook, load chain, hand chain, wheels, ratchet and pawl etc.
b) Hardness for pawl and ratchet
c) Dye penetration test/ UT test for hooks
d) Operational test including operational effort, velocity ratio etc.
e) Proof load test upto 1.5 times of working load limit.
f) Dimensional check of hook
g) Marking

For details, refer standard quality plan enclosed below.

	MANUFACTURER'S NAME & ADDRESS :	**MANUFACTURING QUALITY PLAN** **ITEM :** Chain Pulley Block **QP No.:** PE-TS-RC-563-A101 **REV**.:0, **Date.: , PAGE**: 1 OF 4	**PROJECT : RATE CONTRACT** **PACKAGE : CHAIN PULLEY BLOCK** **VOL IIB, SEC C**

Sr. No.	COMPONENT / OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
					M	C/N				M	C	N	
1.	2.	3.	4.	5.	6.		7.	8.	9.	10.			11.
1	**RAW MATERIAL & B/OUT ITEMS:**												
1.1	HOOKS	CHEMICAL & MECH	MA	LAB ANALYSIS	ONE SAMPLE PER HEAT		MATERIAL SPECIFICATION AS PER APPROVED DRAWINGS.		MTC. ✓	P	V	V	
		MARK & IDENTIFICATION	MA	VISUAL	100%		HOOK TC FROM COMPETENT AUTHORITY		TC ✓	P	V	V	
		INTERNAL DEFECTS	MA	UT	100%		ASTM A-388	(REFER NOTE I)	IR ✓	P	V	V	
		PROOF LOAD TEST	MA	REVIEW	100%		IS 15560		TC ✓	P	V	V	
		NDT AFTER PROOF LOAD TEST	MA	DPT	100%		ASTM E-165	NO RELEVANT INDICATTION	TC ✓	P	V	V	
1.2	LOAD CHAIN	- DIMENSIONS	MA	MEASUREMENT	100%		APPD. DRGS	APPD. DRGS.	IR ✓	P	V	V	
		- BREAKING STR & % ELONGATION	MA	-TENSILE TEST	1/LOT		-DO-	-DO-	MTC ✓	P	V	V	
		- PROOF LOAD -HEAT TREATMENT	MA	-TENSILE TEST	100%		-DO-	-DO-	MTC ✓	P	V	V	
			MA	REVIEW	100%		-DO-	-DO-	HT CHRT ✓	P	V	V	
		-GRADE	MA	REVIEW	1/BATCH		-DO-	-DO-	MTC ✓	P	V	V	

	LEGEND:	FOR CUSTOMER USE	
MANUFACTURER / CONTRACTOR SUB-CONTRACTOR	** M : MANUFACTURER / SUB-SUPPLIER C : BHEL / NOMINATED INSPECTION AGENCY. N : CUSTOMER/ NOMINATED INSPECTION AGENCY. INDICATE "P" PERFORM "W" WITNESS AND "V" VERIFICATION		
SIGNATURE		REVIEWED BY	NAME & SIGN OF APPROVING AUTHORITY & SEAL

MANUFACTURER'S NAME & ADDRESS :	**MANUFACTURING QUALITY PLAN** **ITEM :** Chain Pulley Block **QP No.:** PE-TS-RC-563-A101 **REV**.:0, **Date.: , PAGE**: 2 OF 4	**PROJECT : RATE CONTRACT** **PACKAGE : CHAIN PULLEY BLOCK** **VOL IIB, SEC C**

Sr. No.	COMPONENT / OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
					M	C/N					M	C	N	
1.	2.	3.	4.	5.	6.		7.	8.	9.		10.			11.
1.3	RAW MATL. (BAR /FORGING) FOR GEAR/ RATCHET PAWL / RATCHET WHEEL & PLATES FOR FABRICATION	CHEMICAL COMPOSITION	MA	Review	ONE SAMPLE PER HEAT		Material specification as per approved drawings.		MFR'S TC	✓	P	V	V	TC or inspection report for components shall be given. For rounds ≥40mm and plates ≥20.
		MECHANICAL	MA	Review						✓	P	V	V	
		INTERNAL DEFECTS	MA	UT	100%		ASTM A-388 REFER NOTE 1		IR	✓	P	V	V	
1.4.	LOAD CHAIN WHEELS	- CHEMICAL & MECHANICAL PROPERTIES	MA	CHEMICAL MECHANICAL PROPERTIES	ONE SAMPLE PER LOT		APPD. DRG.	APPD. DRG.	MTC	✓	P	V	V	
1.5	BEARINGS	MAKE, TYPE, CATALOUGE NO.	MA	VISUAL	RANDOM		APP DRG / MFR"S CATALOGUE	APP DRG / MFR"S CATALOGUE	IR	✓	P	V	V	
1.6	HAND CHAIN WHEEL	CHEMICAL MECHANICAL PROPERTIES	MA	CHEMICAL MECHANICAL PROPERTIES	ONE SAMPLE PER LOT		AS PER DRAWING	AS PER DRAWING	MTC	✓	P	V	V	
1.7	HAND CHAIN	GRADE/ DIMENSION	MA	GRADE DIMENSION	100%		AS PER DRAWING	AS PER DRAWING	MTC	✓	P	V	V	

MANUFACTURER / CONTRACTOR SUB-CONTRACTOR SIGNATURE	LEGEND: ** M : MANUFACTURER / SUB-SUPPLIER C : BHEL / NOMINATED INSPECTION AGENCY. N : CUSTOMER/ NOMINATED INSPECTION AGENCY. INDICATE "P" PERFORM "W" WITNESS AND "V" VERIFICATION	FOR CUSTOMER USE REVIEWED BY	NAME & SIGN OF APPROVING AUTHORITY & SEAL

MANUFACTURER'S NAME & ADDRESS :	**MANUFACTURING QUALITY PLAN** **ITEM :** Chain Pulley Block **QP No.:** PE-TS-RC-563-A101 **REV**.:0, **Date.: , PAGE**: 3 OF 4	**PROJECT : RATE CONTRACT** **PACKAGE : CHAIN PULLEY BLOCK** **VOL IIB, SEC C**

Sr. No.	COMPONENT / OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
					M	C/N					M	C	N	
1.	2.	3.	4.	5.	6.		7.	8.	9.		10.			11.
1.8	TROLLEY GEARS, PINION,WHEELS, AXLE	CHEMICAL & MECHANICAL	MA	LAB ANALYSIS,	100%		APPVD DRGS	APPVD DRGS	IR/TC	✓	P	V	V	
2	**IN PROCESS**													
2.1	RATCHET PAWL / RATCHET WHEEL	-HARDNESS	MA	HARDNESS	100%		IS:3832/ APPD DRG.	IS:3832/ APPD. DRG.	IR	✓	P	V	V	
		-SURFACE CRACK	MA	DPT	100 %		ASTM E165	NO DEFECT	IR	✓	P	V	V	
2.2	GEARS AND PINIONS AFTER MACHINING	HEAT TREATMENT	MA	HT CHART	100%		IS 1875/IS 4367/IS 3832		IR	✓	P	V	V	
		SURFACE HARDNESS	MA	HARDNESS	10%		--DO--		IR	✓	P	V	V	
		SURFACE CRACK	MA	DPT FOR SURFACE CRACK	100%		ASTM E 165	NO DEFECT	IR	✓	P	V	V	
		DIMENSION	MA	MEASURE	10%			IS 3832	IR	✓	P	V	V	
3.0	**FINAL INSPECTION**													
3.1	COMPLETE ASSEMBLY	OVERALL DIMENSION	CR	MEASUREMENT	100 %		IS:3832 /APPD DRG	IS:3832 /APPD DRG	IR	✓	P	W	V	
		ENDURNACE TYPE TEST	MA	TYPE TEST	1 PER SIZE		IS 3832	IS 3832	TC	✓	P	V	V	
		OPERATIONAL PROOF LOAD & LIGHT LOAD TEST	CR	LOAD TEST	100%		-DO-	-DO-	IR	✓	P	W	V	
		HEIGHT OF LIFT	MA	VISUAL	100 %		-DO-	-DO-	IR	✓	P	W	V	

	LEGEND:	FOR CUSTOMER USE	
MANUFACTURER / CONTRACTOR SUB-CONTRACTOR	** M : MANUFACTURER / SUB-SUPPLIER C : BHEL / NOMINATED INSPECTION AGENCY. N : CUSTOMER/ NOMINATED INSPECTION AGENCY. INDICATE "P" PERFORM "W" WITNESS AND "V" VERIFICATION		
SIGNATURE		REVIEWED BY	NAME & SIGN OF APPROVING AUTHORITY & SEAL

	MANUFACTURER'S NAME & ADDRESS :	**MANUFACTURING QUALITY PLAN** **ITEM :** Chain Pulley Block **QP No.:** PE-TS-RC-563-A101 **REV**.:0, **Date.: , PAGE**: 4 OF 4	**PROJECT : RATE CONTRACT** **PACKAGE : CHAIN PULLEY BLOCK** **VOL IIB, SEC C**

Sr. No.	COMPONENT / OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
					M	C/N					M	C	N	
1.	2.	3.	4.	5.	6.		7.	8.	9.		10.			11.
		SWIVELING OF HOOK	MA	VISUAL	100%		APPROVED DRG	APPROVED DRG	IR	✓	P	W	V	
		EFFORT	MA	PULL ON CHAIN	100%		-DO-	-DO-	IR	✓	P	W	V	
3.2	PAINTING	-CLEANING	MA	VISUAL	AT RANDOM		APPROVED DRAWING/ **SPECIFICATION**	APPROVED DRAWING/ **SPECIFICATION**	IR		P	---	---	
		- SHADE & DFT OF PAINT	MI	VISUAL	AT RANDOM				IR		p	W	---	
3.3	NAME PLATE	VERIFICATION	MA	VISUAL	100%				IR		P	V	---	
3.4	PACKING	-VERIFICATION	MI	VISUAL	100%		SPECS.	SPECS.	IR		P	---	---	
3.5	REVIEW OF QA DOCUMENTATION	VERIFICATION	MA	VISUAL	100%		APPD. QP	APPD. QP		✓	V	V	V	

CR – CRITICAL, MA – MAJOR , MI – MINOR

NOTE 1: WHEN BACK WALL ECHO (BWE) IS SET AT 100% OF FULL SCREEN HEIGHT (FSH) IN DEFECT FREE AREA THEN
(A) DEFECT ECHO SHALL NOT EXCEED 20% OF FSH &
(B) BWE SHOULD BE MINIMUM 80% OF FSH IN ANY AREA.
NOTE 2: RECORDS IDENTIFIED WITH TICK SHALL BE ESSENTIALLY INLCUDED IN QA DOCUMENTATION.

	LEGEND:	FOR CUSTOMER USE	
MANUFACTURER / CONTRACTOR SUB-CONTRACTOR	** M : MANUFACTURER / SUB-SUPPLIER C : BHEL / NOMINATED INSPECTION AGENCY. N : CUSTOMER/ NOMINATED INSPECTION AGENCY. INDICATE "P" PERFORM "W" WITNESS AND "V" VERIFICATION		
SIGNATURE		REVIEWED BY	NAME & SIGN OF APPROVING AUTHORITY & SEAL

SECTION-I

SUB-SECTION – ID

DATA SHEET- A

DATA SHEET-A

1.00.0	Type	:	Chain pulley block with/ without travelling trolley
2.00.00	Capacity & Lift	:	As per price format
3.00.00	Design	:	IS: 3832
4.00.00	Duty Class as per IS: 3832	:	Class –II (Indoor/outdoor as per scope of supply, Non. Hazardous / Hazardous)

5.00.00 Hoisting Mechanism

a)	Type		:	Hand operated gear transmission
b)	Load Chain		:	
	i)	Type	:	Link type
	ii)	Material	:	As per IS: 3077 / IS3109/IS 6216
	iii)	Conforms to (Std./Code):		IS: 3077/3109/IS 6216
c)	Hand Chain		:	
	i)	Type	:	Link type
	ii)	Material	:	Mild steel (grade 30) as per IS 2429 Part I / II
d)	Load Hook & Hook Block		:	
	i)	Type of load hook	:	Plain shank- Trapezoidal section
	ii)	Load hooks conforms to:		IS: 15560
	iii)	Type of hook suspension:		Swiveling
	iv)	Type of make of bearing	:	Thrust ball bearing of hook suspension
e)	Gears / pinion		:	
	i)	Type	:	Spur / Helical
	ii)	Material	:	Alloy steel / carbon steel / high graded cast iron
	iii)	Type of bearing used	:	Antifriction ball bearing / Roller
f)	Sprockets			
	i)	Type of bearings used	:	Antifriction ball bearing / Roller
g)	Method of lubrications Used			
	i)	Bearings	:	Grease
	ii)	Gearing & Pinions	:	Grease
	iii)	Sprockets	:	Grease
h)	Brakes (Type)		:	Screw and friction disc type
i)	Load chain wheel			
	a)	Material	: As per IS 3832	
j)	Hoisting effort		:Shall not exceed 20 kgf for cap upto 3T and 25 kgf for cap above 3T	

6.00.0 Trolley & Bridge Drive

a) Trolley

i)	Type	:	Geared (Manually operated)
ii)	Material of frame	:	Rolled structural steel (IS:2062 Grade A or B)

b) Drive Chain

i)	Type	:	Link type
ii)	Material	:	Steel Gr.30

c) Trolley Wheel

i)	Number of pairs of wheel in each trolley/bridge	:	Two/four
ii)	Flange	:	Single flanged
iii)	Wheel material	:	As per IS 3832
iv)	Type of bearings need	:	Antifriction

d) Gears/ Pinions

i)	Type	:	Spur / helical
ii)	Material	:	Alloy/ Carbon steel
iii)	Type of bearings used	:	Antifriction

e) Method of lubrication for

i)	Bearings	:	Grease
ii)	Sprockets	:	Grease

f) Hand chain wheel

i)	Material	: As per IS 3832

g) Trolley effort : Shall not be more than 20/55 kg for hoists above 3 ton cap.

7.0.0 SPECIFIC REQUIREMENT FOR CHAIN PULLEY BLOCKS FOR HAZARDOUS AREA:

MOC for Ratchet wheel, chain guides and gears: HTB2 / Solid construction in aluminum bronze or phosphor bronze

MOC for hand chain wheel: Solid construction/ rims of aluminum bronze or phosphor bronze

MOC for hand chain wheel guides:- Solid construction in aluminum bronze or phosphor bronze

MOC for Un-geared & geared wheels: HTB2/PB-4 lining on trolley wheels

SECTION – I

ANNEXURES

ANNEXURE-I

MAKES OF SUB VENDORS ITEMS

Following makes of bought out items shall be considered:

Steel	SAIL/ TISCO/ JINDAL/ ESSAR
Steel Forgings	Chowdhary/Western India Forgings/ Hindustan Steel Forgings/ Ruby Forgings or as approved by BHEL.
Hook	Steel Forgings/ Karachiwala/Smriti/Nasik Forge.
Brakes	OEM

NOTE:

1. THE SUB VENDOR LIST ABOVE IS INDICATIVE ONLY AND IS SUBJECT TO BHEL AND CUSTOMER APPROVAL DURING DETAILED ENGINEERING STAGE WITHOUT ANY COMMERCIAL & DELIVERY IMPLICATION TO BHEL.

   BIDDER TO PROPOSE SUB VENDOR WITHIN 4 WEEKS OF PLACEMENT OF LOI. THEREAFTER NO REQUEST FOR ADDITIONAL SUB-VENDOR SHALL BE ENTERTAINED.

2. DEALERS ARE NOT ACCEPTABLE FOR ANY ITEM OF THE PACKAGE. BIDDER SHALL PROCURE ALL ITEMS INCLUDING PLATES, STRUCTURAL, FLANGES; COUNTER FLANGES ETC. FROM APPROVED SUB VENDOR ONLY.

3. THE INSPECTION CATEGORY WILL BE INTIMATED AFTER AWARD OF CONTRACT BY BHEL/CUSTOMER. HOWEVER THE SAME WILL BE ADHERED BY THE BIDDER WITHOUT ANY COMMERCIAL AND DELIVERY IMPLICATION TO BHEL/ CUSTOMER.

Annexure II
STANDARD ESSENTIAL SPARES LIST FOR CHAIN PULLEY BLOCK

Sl no.	Description	Qnty
1.1	**ESSENTIAL SPARES OF CHAIN PULLEY BLOCK FOR 1T, 6M CPB with TT, non-hazardous area**	
1.1.1	Load chain Wheel	1 no
1.1.2	Load chain stripping fork	1 no
1.1.3	Hand Chain wheel	1 no
1.1.4	Ratchet pawl	1 no
1.1.5	Locking ratchet wheel	1 no
1.1.6	Guide roller	1 no
1.1.7	Brake disc	1 no
1.1.8	Bearings of each type & size used in load chain wheels, lifting hook.	1 set
1.1.9	Bearings of each type & size used in trolley wheels.	1 set
1.1.10	Load chain (for hoisting)	per metre
1.1.11	Hand chain (for hoisting)	per metre
1.1.12	Hand chain (for travelling)	per metre
1.1.13	Grooved pulley	1 set
1.1.14	Pinion	1 set
1.1.15	Shaft pin	1set
1.2	**ESSENTIAL SPARES OF CHAIN PULLEY BLOCK FOR 2T, 6M CPB with TT, non-hazardous area**	
1.2.1	Load chain Wheel	1 no
1.2.2	Load chain stripping fork	1 no
1.2.3	Hand Chain wheel	1 no
1.2.4	Ratchet pawl	1 no
1.2.5	Locking ratchet wheel	1 no
1.2.6	Guide roller	1 no
1.2.7	Brake disc	1 no
1.2.8	Bearings of each type & size used in load chain wheels,lifting hook.	1 set
1.2.9	Bearings of each type & size used in trolley wheels.	1 set
1.2.10	Load chain (for hoisting)	per metre
1.2.11	Hand chain (for hoisting)	per metre
1.2.12	Hand chain (for travelling)	per metre
1.2.13	Grooved pulley	1 set
1.2.14	Pinion	1 set
1.2.15	Shaft pin	1 set
1.3	**ESSENTIAL SPARES OF CHAIN PULLEY BLOCK FOR 3T, 6M CPB with TT, non-hazardous area**	
1.3.1	Load chain Wheel	1 no
1.3.2	Load chain stripping fork	1 no
1.3.3	Hand Chain wheel	1 no
1.3.4	Ratchet pawl	1 no
1.3.5	Locking ratchet wheel	1 no
1.3.6	Guide roller	1 no
1.3.7	Brake disc	1 no
1.3.8	Bearings of each type & size used in load chain wheels,lifting hook.	1 set
1.3.9	Bearings of each type & size used in trolley wheels.	1 set
1.3.10	Load chain (for hoisting)	per metre
1.3.11	Hand chain (for hoisting)	per metre

1.3.12	Hand chain (for travelling)	per metre
1.3.13	Grooved pulley	1 set
1.3.14	Pinion	1 set
1.3.15	Shaft pin	1 set
1.4	**ESSENTIAL SPARES OF CHAIN PULLEY BLOCK FOR 5T, 6M CPB with TT, non-hazardous area**	
1.4.1	Load chain Wheel	1 no
1.4.2	Load chain stripping fork	1 no
1.4.3	Hand Chain wheel	1 no
1.4.4	Ratchet pawl	1 no
1.4.5	Locking ratchet wheel	1 no
1.4.6	Guide roller	1 no
1.4.7	Brake disc	1 no
1.4.8	Bearings of each type & size used in load chain wheels,lifting hook.	1 set
1.4.9	Bearings of each type & size used in trolley wheels.	1 set
1.4.10	Load chain (for hoisting)	per metre
1.4.11	Hand chain (for hoisting)	per metre
1.4.12	Hand chain (for travelling)	per metre
1.4.13	Grooved pulley	1 set
1.4.14	Pinion	1 set
	Total(1.4.1 to 1.4.15)	
1.5	**ESSENTIAL SPARES OF CHAIN PULLEY BLOCK FOR 1T, 6M CPB without TT, non-hazardous area**	
1.5.1	Load chain Wheel	1 no
1.5.2	Load chain stripping fork	1 no
1.5.3	Hand Chain wheel	1 no
1.5.4	Ratchet pawl	1 no
1.5.5	Locking ratchet wheel	1 no
1.5.6	Guide roller	1 no
1.5.7	Brake disc	1 no
1.5.8	Bearings of each type & size used in load chain wheels, lifting hook.	1 set
1.5.9	Load chain (for hoisting)	per metre
1.5.10	Hand chain (for hoisting)	per metre
1.5.11	Grooved pulley	1 set
1.5.12	Pinion	1 set
1.5.13	Shaft pin	1 set
1.6	**ESSENTIAL SPARES OF CHAIN PULLEY BLOCK FOR 2T, 6M CPB without TT, non-hazardous area**	
1.6.1	Load chain Wheel	1 no
1.6.2	Load chain stripping fork	1 no
1.6.3	Hand Chain wheel	1 no
1.6.4	Ratchet pawl	1 no
1.6.5	Locking ratchet wheel	1 no
1.6.6	Guide roller	1 no
1.6.7	Brake disc	1 no
1.6.8	Bearings of each type & size used in load chain wheels, lifting hook.	1 set
1.6.9	Load chain (for hoisting)	per metre
1.6.10	Hand chain (for hoisting)	per metre
1.6.11	Grooved pulley	1 set
1.6.12	Pinion	1 set

1.6.13	Shaft pin	1 set
1.7	**ESSENTIAL SPARES OF CHAIN PULLEY BLOCK FOR 3T, 6M CPB without TT, non-hazardous area**	
1.7.1	Load chain Wheel	1 no
1.7.2	Load chain stripping fork	1 no
1.7.3	Hand Chain wheel	1 no
1.7.4	Ratchet pawl	1 no
1.7.5	Locking ratchet wheel	1 no
1.7.6	Guide roller	1 no
1.7.7	Brake disc	1 no
1.7.8	Bearings of each type & size used in load chain wheels, lifting hook.	1 set
1.7.9	Load chain (for hoisting)	per metre
1.7.10	Hand chain (for hoisting)	per metre
1.7.11	Grooved pulley	1 set
1.7.12	Pinion	1 set
1.7.13	Shaft pin	1 set
1.8	**ESSENTIAL SPARES OF CHAIN PULLEY BLOCK FOR 5T, 6M CPB without TT, non-hazardous area**	
1.8.1	Load chain Wheel	1 no
1.8.2	Load chain stripping fork	1 no
1.8.3	Hand Chain wheel	1 no
1.8.4	Ratchet pawl	1 no
1.8.5	Locking ratchet wheel	1 no
1.8.6	Guide roller	1 no
1.8.7	Brake disc	1 no
1.8.8	Bearings of each type & size used in load chain wheels, lifting hook.	1 set
1.8.9	Load chain (for hoisting)	per metre
1.8.10	Hand chain (for hoisting)	per metre
1.8.11	Grooved pulley	1 set
1.8.12	Pinion	1 set
1.8.13	Shaft pin	1 set
1.9	**ESSENTIAL SPARES OF CHAIN PULLEY BLOCK FOR 8T, 6M CPB without TT, non-hazardous area**	
1.9.1	Load chain Wheel	1 no
1.9.2	Load chain stripping fork	1 no
1.9.3	Hand Chain wheel	1 no
1.9.4	Ratchet pawl	1 no
1.9.5	Locking ratchet wheel	1 no
1.9.6	Guide roller	1 no
1.9.7	Brake disc	1 no
1.9.8	Bearings of each type & size used in load chain wheels, lifting hook.	1 set
1.9.9	Load chain (for hoisting)	per metre
1.9.10	Hand chain (for hoisting)	per metre
1.9.11	Grooved pulley	1 set
1.9.12	Pinion	1 set
1.9.13	Shaft pin	1 set
1.10	**ESSENTIAL SPARES OF CHAIN PULLEY BLOCK FOR 10T, 6M CPB without TT, non-hazardous area**	
1.10.1	Load chain Wheel	1 no
1.10.2	Load chain stripping fork	1 no

1.10.3	Hand Chain wheel	1 no
1.10.4	Ratchet pawl	1 no
1.10.5	Locking ratchet wheel	1 no
1.10.6	Guide roller	1 no
1.10.7	Brake disc	1 no
1.10.8	Bearings of each type & size used in load chain wheels,lifting hook.	1 set
1.10.9	Load chain (for hoisting)	per metre
1.10.10	Hand chain (for hoisting)	per metre
1.10.11	Grooved pulley	1 set
1.10.12	Pinion	1 set
1.10.13	Shaft pin	1 set
1.11	**ESSENTIAL SPARES OF CHAIN PULLEY BLOCK FOR 2T, 6M CPB with TT for hazardous area**	
1.11.1	Load chain Wheel	1 no
1.11.2	Load chain stripping fork	1 no
1.11.3	Hand Chain wheel	1 no
1.11.4	Ratchet pawl	1 no
1.11.5	Locking ratchet wheel	1 no
1.11.6	Guide roller	1 no
1.11.7	Brake disc	1 no
1.11.8	Bearings of each type & size used in load chain wheels,lifting hook.	1 set
1.11.9	Bearings of each type & size used in trolley wheels.	1 set
1.11.10	Load chain (for hoisting)	per metre
1.11.11	Hand chain (for hoisting)	per metre
1.11.12	Hand chain (for travelling)	per metre
1.11.13	Grooved pulley	1 set
1.11.14	Pinion	1 set
1.11.15	Shaft pin	1 set

Notes:

1. The lists of spares indicated are for the type equipment generally used in thermal power plants. If the design or type of equipment proposed by the bidder is different, then the bidder shall suit the spares list according to the type of equipment. However, the numbers or quantity of spares, indicated shall not be reduced.
2. All essential spares shall be supplied as per the requirement of the specifications. In case any spare indicated in the specification is not applicable for particular equipment then suitable applicable alternate spare have been offered / shall be supplied without any financial implication.
3. Any change or variation in equipment or systems during detailed engineering stage which would cause changes / variations in the essential spares quantity, shall be supplied by Vendor without any commercial implications.
4. For quantities indicated in percentage, fractions are to be rounded-off to next higher integer.
5. Any item which is “not applicable” in the above list and is found to be “applicable” at a later date shall be supplied by the Vendor without any extra cost.
6. If any of the items of spares ordered is found to be not applicable during detailed engineering stage/execution stage, the contractor will have to supply alternative items of spares.
7. “One (1) set of each type & size” is defined as 100% requirement for one CPB.

Annexure III
PAINTING

Painting of the equipment shall be carried out to protect the same from rusting / corrosion during shipping, long storage at site, erection, and during its normal operation / usage.

Whilst the essential requirements of surface preparation and painting are specified here, these in no way relieve the contractor of his responsibility to carry out his work in accordance with good practices. However, any deviation/modification from the specification shall be referred to the purchaser for approval.

The following specification shall be followed in general for manual hoists and its accessories. Vendor to note that the same is indicative and specific requirement (including color coding) shall be informed on project to project basis.

Hoist:

A) SURFACE CLEANING -Shot blast cleaning/ abrasive blast cleaning to SA 2 1/2 (near white metal) 35-50 microns.
PRIMER PAINT:-
2 COATS OF AIR DRYING EPOXY POLYAMIDE RESIN BASED RED OXIDE ZINC PHOSPHATE
DFT-100 MICRON (50 MICRON PER COAT).

INTERMEDIATE PAINT:-2 PACK OF AIR DRYING HIGH BUILD EPOXY RESIN BASED PAINT WITH MIO /TiO2
DFT 100 MICRONS.

FINISH PAINT: TWO COATS OF AIR DRYING EPOXY POLYAMIDE ENAMEL SUITABLY PIGMENTED 75 MICRON WITH GLOSSY FINISH. (Min 35 MICRON/COAT). ADDITIONAL ONE COAT (MINIMUM DFT OF 25 MICRONS) OF FINISH COAT OF POLYURETHANE SHALL BE PROVIDED.

TOTALDFT=300 MICRON

Shade
Structure: Golden yellow , RAL 1004

B) Steel surface which is to be painted shall be cleaned of dust and grease and the heavier layers of rust shall be removed by chipping prior to actual surface preparation. The surface shall be abrasive blasted to Sa 2½ finish as per SIS05-5900. Primer paint shall be Zinc Silicate/phosphate of approved brand. Dry film thickness of each primer shall be 60 microns. Two intermediate MIO Epoxy paint, and one top polyurethane coating of approved brand shall be applied. Dry film thickness of each intermediate coat shall be 90 microns and top polyurethane coating shall be 30 microns. The under coat and finish coat shall be of different tint to distinguish the same from finish paint. The total dry film thickness shall be 330 microns
Shade
Structure: Golden yellow , Shade 356 of IS 5 / Shade 540 of IS 5.

C) Surface preparation : Steel Surfaces : Blasting according to SIS 055900 grade Sa 2½
Primer: One (1) layers of Primer paint shall be Solvent based IZS - VS of 60%. Zn Dust - 1.77 kg/ltr minimum. Zn dust by weight - minimum 85%. Pot life 12 hrs/ 21 Deg.- Paint to meet compositional & performance specifications for SSPC Paint 20, Level 1, DFT 75 µm.

Touch up: One (1), Two component Zinc rich Primer meeting performance and compositional specifications of SSPC Paint 20 Level2, DFT 75 µm.
Mid Coat: One (1), 2 pack High build High Solid Lamellar MIO based Epoxy Mid coat., DFT 200 µm.
Finish Coat: One (1) finishing coats of 2 pack Acrylic Aliphatic Polyurethane top coat - with Gloss retention of at least 90% on QUVB exposure of minimum 1000 hrs. DFT 75 µm.
DFT : 330µm
Mechanical Components and Motor: Surface preparation : Blasting according to SIS 055900 grade Sa 2½
Catalyzed Zn rich Primer with a VS of 60% min, complying to SSPC Paint 20 level 2 DFT 75 µm.
Finish Coat : Two (2) finishing coat of two component High Build high Solid Aliphatic Amine Cured Epoxy coating. - Min VS 85%. DFT 200 µm.
Total DFT : 275 µm

Note: Hook block shall be painted with golden yellow.

ANNEXURE – IV

A.0 DRAWINGS/DESIGN DOCUMENTS FOR SUBMISSION (during detailed engineering)

The successful bidder shall submit the following drawings / documents during detail engineering for customer's approval /information:

Sl. No.	BHEL DRG.NO	DRAWING TITLE	REMARKS	SUBMISSION SCHEDULE - WEEK NUMBER FROM DATE OF P.O
1	PE-V0-RC-563-A101	"GA Drawing for Chain Pulley Block with detail BOM with painting details	For Customer's approval	2
2	PE-V0-RC-563-A102	Manufacturing Quality Plan	For Customer's approval	2
3	PE-V0-RC-563-A104	Erection procedure	For BHEL's approval	4
4	PE-V0-RC-563-A103	O & M Manual	For BHEL's approval	4
5	PE-V0-RC-563-A106	Mandatory spare parts list (if applicable)	For Customer's approval	3

Notes:
BHEL/CUSTOMER SHALL COMMENT /APPROVE THE DRAWINGS WITHIN 15 DAYS OF RECIEPT OF DRAWINGS.
VENDOR SHALL RESUBMIT THE REVISED DRAWINGS WITHIN 7 DAYS OF RECIEPT OF COMMENTS.
INCOMPLETE DRAWINGS/DOCUMENTS SHALL NOT BE TREATED AS SUBMITTED.
MANUFACTURING SHALL BE STARTED ON RECIEPT OF CAT II APPROVED DRAWINGS.

B.0 NO.OF DRAWINGS/DOCUMENTS FOR SUBMISSION (Project specific *)

A.	Drawing for Approval	No. of prints/copies (hard prints)
i.	For approval	8
ii.	For final distribution (after the vendor obtains	12
	Final approval from the customer).	
B.	Certificate, reports etc. (Material test, inspection	6
	Report and all other type of tests etc.)	
C.	O&M Manual	
I.	Draft for approval	2
ii.	For final distribution	12

Note:
a) The number of prints/hard copies are indicative and may change on project to project basis.

b) Bidder to note that all the drawings and documents shall also be submitted on CD's (compact dics) in following software.

I. All the drawings shall be prepared in AutoCAD.
II. All the documents shall be prepared MS word / EXCEL.
III. PDF files for all drawings/documents shall also be submitted.

C.0 DOCUMENT MANAGEMENT SYSTEM

1.0 Bidder to note that BHEL reserves the right for drawing/document submission through web based Document Management System. Bidder would be provided access to the DMS for drawing/document approval and adequate training for the same. Detailed methodology would be finalized during the kick-off meeting. Bidder to ensure following at their end.

- Internet explorer version – Minimum Internet Explorer 7.
- Internet speed – 2 mbps (Minimum preferred).
- Pop ups from our external DMS IP (124.124.36.198) should not be blocked.
- Vendor's internal proxy setting should not block DMS application's link (http://124.124.36.198/wrenchwebaccess/login.aspx).

ANNEXURE -V

Check List for Operation & Maintenance Manual

1	Project name	:
2	Project number	:
3	Package Name	:
4	PO reference	:
5	Document number	:
6	Revision number	:

Sl.no. & Sections	Description	Tick (√)if included in Manual			Remarks
		Yes	No	Not Applicable	
1.	**Cover page**				
1.1	Project Name				
1.2	Customer/consultant Name				
1.3	Name of Package				
1.4	Supplier details with phone, FAX ,email address , Emergency Contact number				
1.5	Name and sign of prepared by , checked by & approved by				
1.6	Revision history with approval Details				
2.0	**Index**				
2.1	showing the sections & related page nos All the pages should be numbered section wise				
3.0	**Description of Plant/System**				
3.1	Description /write up of operating principle of system equipment/ associated sub-systems & accessories/controls system , operating conditions, performance parameters under normal , start up and special cases				
3.2	Equipment list and basic parameter with Tag numbers				
3.3	Data sheets approved by Customer/for information and catalogues provided by original manufacturer				
3.4	Associated other packages and Interface /terminal points				
3.5	P&ID & Process Diagrams				
3.6	GA Layout drawings, As-built drawings , Actual photograph of items/system (Drawings of A2 & bigger sizes are to be attached in the last)				
3.7	Single line/wiring diagrams				

3.8	Control philosophy /control write-ups				
4.0	**Commissioning Activities (if not covered in separate document i.e. erection manual, commissioning manual)**				
4.1	Pre-Commissioning Checks				
4.2	handling of items at site				
4.3	Storage at site				
4.4	Unpacking & Installation procedure				
5.0	**Operation Guidelines for plant personal/user/operator**				
5. 1	Interlock & Protection logic along with the limiting values of protection settings for the equipment along with brief philosophy behind the logic, drawings etc. to be provided.				
5. 2	Start up, normal operation and shut down procedure for equipments along with the associated systems in step by step mode. Valve sequence chart, step list, interlocks etc. with Equipment isolating procedures to be mentioned.				
5. 3	Do's & Don't of the equipments.				
5. 4	Safety precautions to be taken during normal operation. Safety symbols, Emergency instructions on total power failure condition/lubrication failure/any other condition				
5. 5	Parameters to be monitored with normal values and limiting values				
5. 6	Trouble shooting with causes and remedial measures				
5. 7	Routine operational checks, recommended logs & records				
5. 8	Changeover schedule if more than one auxiliary for the same purpose is given				
5. 9	Painting requirement and schedule				
5. 10	Inspection, repair , Testing and calibration procedures				
6.0	**Maintenance guidelines for plant personal**				
6.1	List of Special Tools and Tackles required for Overhaul/Trouble shooting including special testing equipment required for calibration etc.				
6.2	Stepwise dismantling and re-assembly procedure clearly specifying the tools to be used, checks to be made, records to be maintained, clearances etc. to be				

	mentioned. Tolerances for fitment of various components to be given.				
6.3	Preventive Maintenance & Overhauling schedules linked with running hours/calendar period along with checks to be given				
6.4	Long term maintenance schedules especially for structural, foundations etc.				
6.5	Consumable list along with the estimated quantity required during commissioning, normal running and during maintenance like Preventive Maintenances and Overhaul. Storage/handling requirement of consumables/self-life.				
6.6	List of lubricants with their Indian equivalent, Lubrication Schedule, Quantity required for each equipment for complete replacement is to be given				
6.7	List of vendors & Sub-vendors with their latest addresses, service centres ,Telephone Nos., Fax Nos., Mobile Nos., e-mail IDs etc.				
6.8	List of mandatory and recommended spare parts list				
6.9	Tentative Lead time required for ordering of spares from the equipment supplier				
6.10	Guarantee and warranty clauses				
7.0	**Statutory and other specific requirements considerations.**				
8.0	**List of reference documents**				
9.0	**Binding as per requirement**				

Checked by
Dealing Engineer

Key Resource Person

Section Head

SECTION – IIA

STANDARD TECHNICAL REQUIREMENTS

GENERAL

This specification covers the design, manufacture, assembly, painting, inspection and testing at manufacturer's works of hand operated chain pulley block.

CODES AND STANDARDS

The design, manufacture, inspection and testing and performance of hand operated chain pulley blocks shall confirm to latest editions of the following standards : -

IS: 3832	Specification for hand operated chain pulley block.
IS 807:1976	Codes of Practice for Design, Manufacture, Erection and Testing (Structural Portion) of cranes and hoists.
IS: 3109(Part II)	Calibrated load chain for pulley blocks and other lifting appliances
IS: 2429(Part I)	Non calibrated hand chain for pulley blocks and other lifting appliances
IS: 4460	Method for rating of machine cut spur and helical gears
IS 3077:2001	Short Link Chain, Calibrated for Chain Pulley Blocks and other Lifting Appliances
IS:15560: 2005	Point Hooks with Shank up to 160 Tonne – Specification
IS: 28	Specification for Phosphor Bronze Ingots and Castings (for hazardous area requirement)
IS: 305	Specification for Aluminum Bronze Ingots and Castings (for hazardous area requirement)

EQUIPMENT

Chain Pulley Block – The block shall be so designed that all components shall withstand without failure, an application to the block of a load equal to at least four times the working load limit. The chain pulley block shall be a complete unit with trolley (if applicable), load chain, load chain wheel, hand chain, hand chain wheel, necessary gearing, brakes for hoisting, hook and other accessories. Factor of safety shall be (5) five for chain pulley block.

Frame- Frame shall be robust in design and of welded construction .The frame shall be selected in such a way that head room requirement is minimum. Frame shall maintain alignment under all expected conditions of services.

Chain- The load chain shall be electrically welded, accurately calibrated, and pitched arid polished conforming to IS: 6216 Grade 80(T8)/ IS 3109 (Part 2) / IS 3077:2001

i. The load chain shall be electrically welded, accurately calibrated, and pitched arid polished conforming to grade 40 as per IS 3109 (Part 2)/ IS 3077:2001 / IS 6216.

ii. The hand chain shall also be electrically welded, pitched and polished and shall conform to IS: 2429 (Part II)/ grade 30 as per IS: 2429 (part-I). The length of chain and link dimension shall be as per IS: 3832.

Hook The forged hook shall be properly heat treated and so designed that in loaded

condition, it is free to swivel without twisting the load chain. The hook shall conform to IS: 15560

Reduction Gear- The reduction gear shall be either spur or worm/ worm wheel type. The spur gear and worm shall be of high grade carbon steel and heat treated. The worm wheel shall be of bronze. A detachable steel cover shall be provided for total enclosure of the gear train and ample lubrication to be provided.

Brakes- Brakes shall be of screw friction disc type self-actuating or any other superior type. Brake capacity shall be ample and humid atmosphere shall not affect materials used. The brake shall prevent self-lowering of load and arrest and sustain load in all working positions. The load brake shall also allow smooth lowering of the load without serious overheating which may impair working of block

Bearing- Bearing used shall be as per guidelines laid down in IS: 3832.

Chain Wheels- The load chain wheel shall be made of heavy duty malleable casting and shall be designed to ensure, effective operation of the chain. Load chain wheels shall be mounted on two ball bearings. Hand chain wheel shall be made from malleable casting/pressed sheet steel. The idler wheel shall be so shaped as to avoid the twisting of the chain during operation. The P.C.D of idler wheels shall be such that the bending action of the link is avoided. The hand chain wheel shall be provided with flanges and designed to ensure effective operation with hand chain.

Trolley Monorail trolley frame shall be of heavy section rolled steel, held together by bolts. Wheels shall be of high grade cast iron/steel mounted on ball bearings. Axles and shafts shall be of carbon steel, accurately machined and suitably supported. The trolley shall be suitable for variations in I section beams. The trolley shall be geared travel type.

Other components- All other components of chain pulley block such as anchorage, guide, pawl, stripper etc. shall be designed and provided as per IS: 3832.

Effort Hoisting effort shall not exceed 20 kgf for cap upto 3T and 25 kgf for cap above 3T.
Trolley effort shall not be more than 20/55 kg for hoists above 3 ton cap.

Each hoist shall be permanently and legibly stamped with tag number, manufacturer's name, safe working load, grade of load chain (if applicable), lift etc.

SECTION- III

DRAWINGS / DOCUMENTS TO BE SUBMITTED WITH THE BID:

Bidder shall submit the following drawings / documents along with their bid

a) Deviation schedule with reference to specific clauses of the specification along with reason for such deviation or No deviation in the deviation sheet “cost of withdrawal” format given in GCC

b) Copy of pre-bid clarifications, if any, duly signed & stamped before bid opening

c) Signed/ Stamped copy of Compliance cum Confirmation Certificate (attached in Section-III)

d) Unpriced copy of price format indicating quoted/ not quoted against each row/column along with cost of withdrawal / price implication format for deviations.

OFFER WILL BE CONSIDERED AS INCOMPLETE IN ABSENCE OF ANY OF ABOVE DOCUMENTS. DOCUMENT OTHER THAN ABOVE, IF ANY, SUBMITTED WITH THE OFFER WILL NOT FORM PART OF CONTRACT AND ACCORDINGLY WILL NOT BE CONSIDERED FOR BID EVALUATION.

COMPLIANCE CUM CONFIRMATION CERTIFICATE

The bidder shall confirm compliance with following by signing/ stamping this compliance certificate (every sheet) and furnish same with the offer.

a) The scope of supply, technical details, construction features, design parameters etc. shall be as per technical specification & there are no exclusions other than those mentioned under "exclusion" in section C and those resolved as per 'Schedule of Deviations', if applicable, with regard to same.

b) There are no other deviations w.r.t. specifications other than those furnished in the 'Schedule of Deviations'. Any other deviation, stated or implied, taken elsewhere in the offer stands withdrawn unless specifically brought out in the 'Schedule of Deviations'.

c) Bidder shall submit QP in the event of order based on the guidelines given in the specification & QP enclosed therein. QP will be subject to BHEL/ CUSTOMER approval & customer hold points for inspection/ testing shall be marked in the QP at the contract stage. Inspection/ testing shall be witnessed as per same apart from review of various test certificates/ Inspection records etc. This shall be within the contracted price with no extra implications to BHEL after award of the contract.

d) All drawings/ data-sheets/ calculations etc. submitted along with the offer shall be considered for reference only, same shall be subject to BHEL/ CUSTOMER approval in the event of order.

e) The offered materials shall be either equivalent or superior to those specified in the specification & shall meet the specified/ intended duty requirements. In case the material specified in the specifications is not compatible for intended duty requirements then same shall be resolved by the bidder with BHEL during the pre - bid discussions, otherwise BHEL/ Customer's decision shall be binding on the bidder whenever the deficiency is pointed out.

   For components where materials are not specified, same shall be suitable for intended duty, all materials shall be subject to approval in the event of order.

f) The commissioning spares shall be supplied on 'As Required Basis' & prices for same included in the base price itself.

g) All sub vendors shall be subject to BHEL/ CUSTOMER approval in the event of order.

h) Guarantee for plant /equipment shall be as per relevant clause of GCC /SCC /Other Commercial Terms & Conditions.

i) In the event of order, all the material required for completing the job at site shall be supplied by the bidder within the ordered price and within purview of the tender specification even if the same are additional to approved billing break up, approved drawing or approved Bill of quantities.

j) Schedule of drawings submissions, comment incorporations & approval shall be as stipulated in the specifications. The successful bidder shall depute his design personnel to BHEL's/ Customer's/ Consultant's office for across the table resolution of issues and to get documents approved in the stipulated time.

k) As built drawings shall be submitted as and when required during the project execution.

l) The bidder has not tempered with this compliance cum confirmation certificate and if at any stage any tempering in the signed copy of this document is noticed then same shall be treated as breach of contract and suitable actions shall be taken against the bidder.

m) Regarding commercial documents / deviations, BHEL clarified that commercial documents / deviations shall not been considered during technical evaluation. However if any issue in the commercial documents / deviation related to technical requirements needs to be highlighted and resolve in technical evaluation only.

No aspect of commercial issues needs to be highlighted / resolved in technical evaluation and their offer is strictly in compliance with technical specification. BHEL also clarified to the bidder any technical deviations (e.g. related to MDL, required documentation etc. for completion of the project) raised by them in commercial deviation either explicit or implicit shall be considered null and void even if agreed by BHEL during commercial evaluation stage.

Bidder agreed to confirm and compliance with technical specification and subsequent clarification on bids during pre- award discussion.

PRE-BID CLARIFICATION SCHEDULE

S. No.	Section/Clause /Page No.	Statement of the referred clause	Clarification Required

The bidder hereby certifies that above mentioned are the only clarifications required on the technical specification for the subject package.

SIGNATURE: _____

NAME: _____

DESIGNATION: _____

COMPANY: _____

DATE: _____

COMPANY SEAL

DEVIATION SHEET (COST OF WITHDRAWAL)

PROJECT:-RATE CONTRACT

PACKAGE:- CHAIN PULLEY BLOCK

TENDER ENQUIRY REFERENCE:-

SPECIFICATION NO PE-TS-RC-563-A101 **SECTION III**

NAME OF VENDOR:-

SL NO	VOULME/ SECTION	PAGE NO.	CLAUSE NO.	TECHNICAL SPECIFICATION / TENDER DOCUMENT	COMPLETE DESCRIPTION OF DEVIATION	COST OF WITHDRAWL OF DEVIATION	REFERENCE OF PRICE SCHEDULE ON WHICH COST OF WITHDRAWL OF DEVIATION IS APPLICABLE	NATURE OF COST OF WITHDRAWL OF DEVIATION (POSITIVE/ NEGATIVE)	REASON FOR QUOTING DEVIATION
TECHNICAL DEVIATIONS									
		In case of no deviation, the same is to be mentioned here. Otherwise, clause wise deviaitons along with cost of withdrawal of deviation, if applicable shall be furnished in sealed envelope along with Original price bid. However, the same shall be indicated as 'Quoted' under column 'Cost of Withdrawal of Deviation' along with technical offer/ un-priced bid.							
COMMERCIAL DEVIATIONS									

PARTICULARS OF BIDDERS/ AUTHORISED REPRESENTATIVE

NAME	**DESIGNATIONS**	**SIGN & DATE**	

NOTES:

1. For self manufactured items of bidder, cost of withdrawl of deviation will be applicable on the basic price (i.e. excluding taxes, duties & freight) only.
2. For directly dispatchable items, cost of withdrawl of deviation will be applicable on the basic price including taxes, duties & freight.
3. All the bidders have to list out all their Technical & Commercial Deviations (if any) in detail in the above format.
4. Any deviation not mentioned above and shown separately or found hidden in offer, will not be taken cognizance of.
5. Bidder shall submit duly filled unpriced copy of above format indicating "quoted" in "cost of withdrawl of deviation" column of the schedule above along with their Techno-commercial offer, wherever applicable.
6. Bidder shall furnish price copy of above format along with price bid.
7. The final decision of acceptance/ rejection of the deviations quoted by the bidder shall be at discretion of the Purchaser.
8. Bidders to note that any deviation (technical/commercial) not listed in above and asked after Part-I opening shall not be considered.
9. For deviations w.r.t. Payment terms, Liquidated damages, Firm prices and submission of E1/ E2 forms before claiming 10% payment, if a bidder chooses not to give any cost of withdrawl of deviation loading as per Annexure-VIII of GCC, Rev-06 will apply. For any other deviation mentioned in un-priced copy of this format submitted with Part-I bid but not mentioned in priced copy of this
10. Any deviation mentioned in priced copy of this format, but not mentioned in the un-priced copy, shall not be accepted.
11. All techno-commercial terms and conditions of NIT shall be deemed to have been accepted by the bidder, other than those listed in unpriced copy of this format.
12. Cost of withdrawl is to be given seperately for each deviation. In no event bidder should club cost of withdrawl of more than one deviation else cost of withdrawl of such deviations which have been clubbed together shall be considered as NIL.
13. In case nature of cost of withdrawl (positive/negative) is not specified it shall be assumed as positive.
14. In case of descrepancy in the nature of impact (positive/ negative), positive will be considered for evaluation and negative for ordering.