



Government of India
Bhabha Atomic Research Centre
Nuclear Recycle Group
Process Development Division

CDCFT, WIP Complex, Trombay

Ref: PSDD/PEDS/MF/SS/2019/OPA/ 16849

Dated: 23.01.2019

Sub: Site clearance, supply of material and fabrication cum erection of a mild steel shed at OTF, as per the attached technical specifications, without any free issue of material.

Dear,

You are requested to submit your quotation in a sealed envelope (**by Speed Post only**) for the above mentioned job. The material should confirm to our specifications. The reference no. given above should be clearly mentioned on the sealed envelope.

Quotation shall be complete in all respects with regard to specifications, validity of offer etc., and must reach the following address on or before **February 20, 2019** by **14:00 hrs.**

Sukhdeep Singh
SO/D, PSDD,
Room No.: 204, CDCFT, WIP Complex,
BARC, Trombay, Mumbai-400 085
Tel: 022-25591431

Due consideration shall be given to the following aspects while you submit your offer:

1. The contractor shall arrange all equipment and personnel required for the successful completion of the work and the department will not release any free-issue material except electricity and water.
2. The work shall be completed within **3 months** from the issue of work order.
3. The offer shall be valid for a period of **30 days** and in case of placement of the work order, shall remain firm till the completion of the work.
4. Taxes, duties and other charges applicable, if any, shall be indicated separately.
5. Quotation should be on the printed letter head/quotation format which should consist of Sales Tax Registration Number registered with local ST authority/ CST authority, PAN Number of the firm, Service Tax Registration Number, etc. Computer generated forms are to be construed as invalid and rejected.

Security Rules and Regulations:

Rules and regulations of BARC Security have to be strictly followed by contractor. Contractor has to get photo passes issued from security for which Police Verification Certificate is a must. Police Verification Certificate is valid for only 6 months and need to be renewed after every 6 months. All persons working in BARC premises should have a Police Verification Certificate.

Sukhdeep Singh

Yours sincerely, 23/01/2019.

सुखदीप सिंह (Sukhdeep Singh)
SO/D, PSDD
वैज्ञानिक अधिकारी (D) / Scientific Officer (D)
प्रक्रम विकास प्रभाग / Process Development Division
नाभिकीय पुनर्चक्रण वर्ग / Nuclear Recycle Group
भावा परमाणु अनुसंधान केंद्र / Bhabha Atomic Research Centre
भारत सरकार / Government of India
ट्रम्बे / Trombay, मुंबई / Mumbai-400085.

Technical Specifications

for

Site clearance, supply of material and fabrication cum erection of a mild steel shed at OTF, as per the attached technical specifications, without any free issue of material.

1. Scope of Supply

Scope of supply for this work involves the supply of following mild steel (MS: IS2062 E250 GR BR) items:

S. No.	Item	Quantity	Purpose
1.	MS Channels: Depth x Flange Width x Thickness: ISMC 150 mm x 75 mm x 5 mm	3100 kg	For structural fabrication (7600 kg)
2.	MS Channels: Depth x Flange Width x Thickness: ISMC 100 mm x 50 mm x 5 mm	2500 kg	
3.	MS Angles: Width x Height x Thickness: ISA 50 mm x 50 mm x 5 mm	1000 kg	
4.	MS I-Beams: Height x Width x Thickness: ISLB 250 mm x 125 mm x 8.2 mm	300 kg	
5.	MS Flat Strips: Width x Thickness 40 mm x 5 mm	400 kg	
6.	MS Plates: Thickness: 12 mm	300 kg	
7.	MS Al-Zn Coated Sheets: Thickness: 0.5 mm	120 m ²	For roofing
8.	MS Fencing Mesh with 2 inch Opening	160 m ²	For fencing
9.	4 Inch SCH 40 PVC Gutters (L = 6 m, H = 6.5 m)	02 Nos.	For drainage of rain water from the roof
10.	Chain Pulley Block: Capacity: 0.5 Ton Standard Lift: 7 m Operation: Manual	01 Nos.	For equipment handling inside the shed
11.	MS Anchor Bolts: M20: L= 150 mm	70 Nos.	For fixation of structure on concrete base

2. Scope of Work

- 2.1 First part of the job will be the clearance of the site in the vicinity of OTF Building, by dismantling of an existing old MS shed (~500 kg), and shifting of the dismantled materials, along with some additional ~1000 kg of SS equipment lying underneath, to the steel yard inside BARC premises. For this work, adequate transport and handling machinery will be provided by BARC to the workers, however, they shall, on their own, dismantle the shed, load and unload the materials for the said transportation to the steel yard.
- 2.2 Subsequent to the site clearance, the second part of the job will be the fabrication and erection of a mild steel (MS) structure, fixing of the light weight roofing (with 500 mm of vertical skirting at top, and curved edges to prevent the ingress of rain water) with Al-Zn alloy coated steel sheet and the fencing of the said structure from all four sides, followed by an epoxy painting; on a concrete base admeasuring 3.7 m x 11.4 m (approx.) outside the OTF Building in the PP, Complex at BARC, as per the attached drawing/sketch (**Annexure-I**).
- 2.3 All the MS structural material, fencing material, and the Al-Zn coated mild steel sheet (**confirming to ASTM-792**) required for the work, as detailed in **Section-1**, shall be in the scope of the contractor.
- 2.4 Upon the completion of the erection of the shed, the Chain Pulley Block (as detailed in **Section 1**) shall be installed inside the shed at an adequate channel location in the roof. Needful provisions shall be made in the shed structure for hanging the said Chain Pulley Block. **Since the supply of this 0.5 Ton Chain Pulley Block has been kept in the scope of contractor, a certificate with regard to the load testing of the same, as per the applicable code(s), shall be submitted before the completion of the work. Annexure-II** shall be referred for the design of said Chain Pulley Block.
- 2.5 Welding of the job shall be carried out by qualified welder(s) using SMAW/GTAW welding process. Welding surface shall be smooth, uniform, and free of fines, tears, notches or any other defect which may adversely affect the quality of the welded joints. AWS: 7018 grade electrodes (containing low hydrogen) shall be used for welding the MS plates. The electrodes shall be of reputed make. **Electrode's test certificates shall be submitted for purchaser's review before the commencement of the fabrication.**
- 2.6 Structural steel confirming to IS2062 E250 GR BR shall be used for the work. **A material test certificate in this regard shall be submitted by the contractor, before the commencement of the fabrication.**
- 2.7 Construction of anchored footings with gusset plates (as shown in **Annexure-I**) using the 12 mm thick MS plate for structural columns shall also be in the contractor's scope.
- 2.8 The job also involves the supply and installation of coloured Al-Zn alloy coated mild steel 550 MPa roofing sheets of 0.5 mm thick. Cutting and fixing of sheet as per the requirement, along with the supply and fixation of self-drilling screws, hooks, nut-bolts, washers shall be in the contractor's scope. Total surface area to be covered using this sheet shall be ~120 m².

- 2.9 The entire shed shall be provided with **MS chain link fencing**, having a **2 inch** openings, in order to restrict the access of animals e.g. monkeys etc. inside the shed.
- 2.10 The structural steel and the fencing shall be painted all over, with two coats of primer, each of 25 µm thick. Two coats of epoxy in pista or gray shade, with each of at least 100 µm thick. The paint shall be applied after installation at the site.
- 2.11 Some minor modifications in the structure/design of the shed might be required at the time of erection/fabrication. The contraction shall incorporated those changes as required, at **no extra cost** to BARC.
- 2.12 All the tools and tackles such as cutting set, welding machine, chain-pulley block, grinders etc. required for the job shall be in contractor's scope.
- 2.13 Water and electricity will be provided at site by the department at no cost.
- 2.14 **No Free Issue Material (FIM)** will be issued against this work order.
- 2.15 All the work will be carried out in inactive area.

3. General Conditions of Contract

- 3.1 Throughout the period of site work, the contractor shall adopt good practices pertinent to industrial safety of his personnel, equipment and as well as others working in the area. These steps include protection against fire, electrical hazards, and care during material handling etc.
- 3.2 The contractor shall nominate a group leader for the overall supervision of the workers. The nominated group leader shall work in consultation with the concerned engineer from BARC.
- 3.3 Contractor's personnel shall have the police verification clearances, medical certificates for fitness, and they should all adhere to the security norms of the BARC. This is absolutely essential, since the work is to be carried out inside BARC, which is a restricted area. The contractor shall ensure the safe working conditions for the work force. Any damage to nearby equipment and any mishap/accident to the working persons will be the contractor's responsibility. The contractor will bear all the medical expenses in case of any physical injury to the worker(s), however a first-aid (in case of an unfortunate miss-happening) will be provided by the department, if possible.
- 3.4 The work shall be completed within **3 months** after the award of the contract.

4. Guarantee

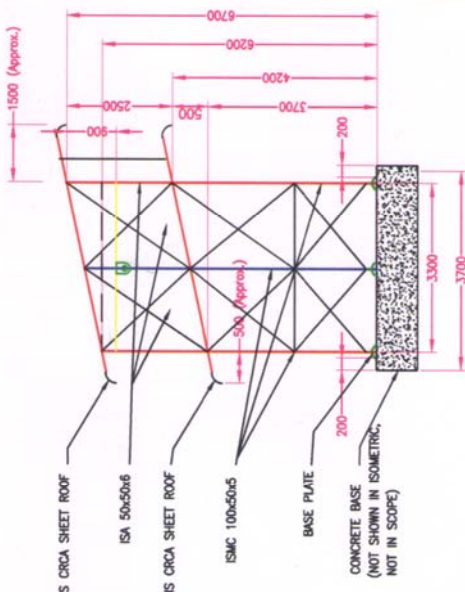
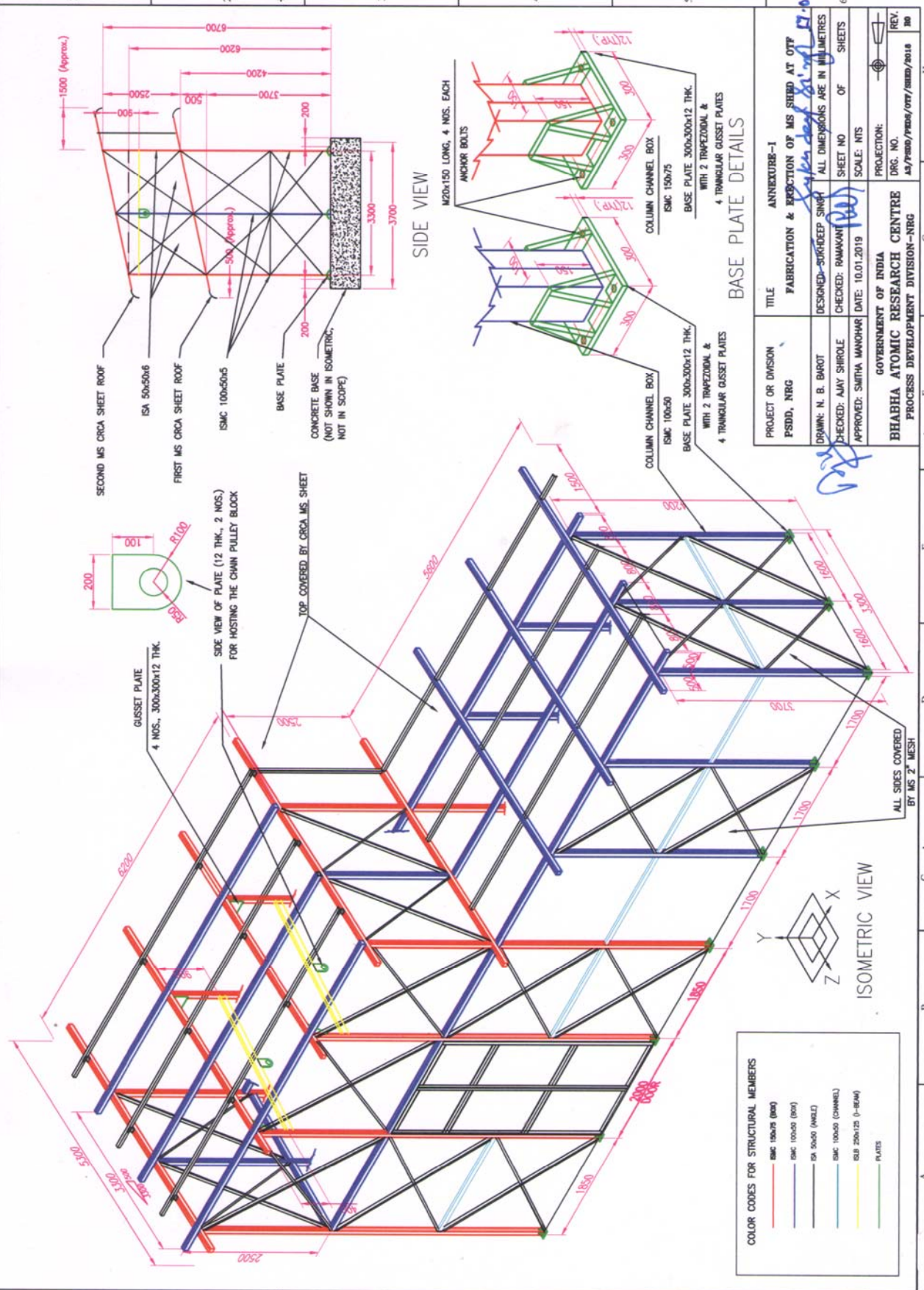
- 4.1 The job covered under this work order shall be guaranteed for a period of 1 year, from the date of completion, for its material and workmanship. The contractor/supplier shall rectify the defects/faults detected from time to time at no extra cost to the purchaser, during the guarantee period.

Annexure-I: Fabrication & Erection Drawing of the MS Shed at OTF.

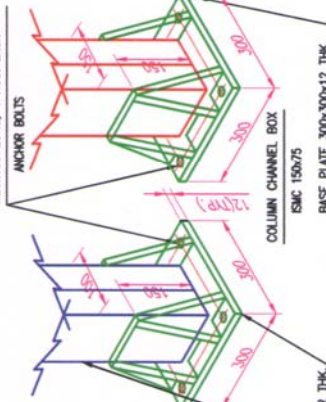
Annexure-II: Detailed Technical Specifications of the Chain Pulley Block.



IF IN DOUBT, ASK



SIDE VIEW



BASE PLATE DETAILS

PROJECT OR DIVISION PSDD, NRG	TITLE ANNEXURE-I FABRICATION & ERECTION OF MS SHEED AT OTTP
DRAWN: N. B. BAROT	DESIGNED: SURKHEEP SINGH
CHECKED: AMY SHIROLE	CHECKED: RAMAKANT
APPROVED: SMITHA MANOHAR	DATE: 10.01.2019
GOVERNMENT OF INDIA BHABHA ATOMIC RESEARCH CENTRE PROCESS DEVELOPMENT DIVISION-NRG	
PROJECTION: DRG. NO. AS/P/190/PSDD/OTTP/MSDD/0018	
SHEET NO. OF SHEETS SCALE: NTS	

COLOR CODES FOR STRUCTURAL MEMBERS

ISMC 150x75 (RED)	PLATES
ISMC 100x50 (BLUE)	
IS 50x50 (BLACK)	
ISMC 100x50 (CHANNEL)	
ISLB 200x125 (YELLOW)	

ISOMETRIC VIEW

THIS DESIGN AND DRAWING IS THE PROPERTY OF BHABHA ATOMIC RESEARCH CENTRE
 IT MUST BE RETURNED WITH QUOTATION OR UPON DELIVERY OF MATERIAL AND
 EQUIPMENT AND MUST NOT BE USED EXCEPT BY PERMISSION OF THE OWNER.

ANNEXURE-II

DETAILED TECHNICAL SPECIFICATIONS OF THE CHAIN PULLEY BLOCK

SECTION-1 GENERAL

1. **INTRODUCTION:** Manually operated **0.5 MT** capacity chain pulley block is required for installation and dismantling of the process equipment at MS Shed, OTF. The design of chain pulley block shall be compact modular type, reliable and of proven quality.
2. **SCOPE:** The scope of work includes supply, testing, packing, transportation, installation & commissioning of 1 no. of manual chain pulley block at the project site at Mumbai. In addition, the complete documentation, listing of spare parts, maintenance manual, troubleshooting methodology etc. shall also be in the scope of the work. Following are the scope of the work:
 - a. Preparation of design & fabrication drawings for complete assembly of manual chain pulley block and obtaining its approval from the Purchaser.
 - b. Complete fabrication at shop/site.
 - c. Supply of complete accessories such as chain, trolley, pulley etc.
 - d. Complete Testing at works.
 - e. Painting (at workshop and/or site as per the need).
 - f. Packing & safe transportation of the monorail and trolley at site.
 - g. Installation & commissioning of the chain pulley block.
 - h. Load Testing of the installed chain pulley block as per the approved procedure.

3. DESIGN SPECIFICATION:

a.	Number of unit	:	1
b.	Type of chain pulley block	:	Standard
c.	Capacity	:	0.5 MT
d.	Height of the Lift	:	7 meter
e.	Hoisting	:	Manual
f.	Method of operation	:	Complete manual with chain operation

4. MATERIAL OF CONSTRUCTION:

All materials used shall be of sound quality and shall conform to latest relevant standards as below:

i.	Steel Plates	:	IS-2062, Grade B
ii.	High Tensile Bolts	:	BS-970 (EN-24) or IS equivalent
iii.	Hooks and Clevises	:	IS-1875 Class 3A and IS-3815, BS-482 & BS-2903.
iv.	Steel Pinions	:	BS-970 (EN-24) or IS equivalent
v.	Steel Shafts and Axles	:	BS-970 (EN-8) or IS equivalent

vi.	Pins and Screws	:	BS-970 (EN-8) or IS equivalent
vii.	Steel Castings	:	IS-1030 (Gr-II)
viii.	Iron Castings	:	IS-210 (Grade 4 or better)
ix.	Steel Forging	:	IS-2004, Class III (carbon percentage 0.25 to 0.35.)
x.	Hoisting chain	:	Standard make

5. DESIGN REQUIREMENTS:

Design of chain pulley block shall conform to IS3832 latest edition.

- a. **Gear Train:** In order to ensure smooth operation & long life of gear train all gear transmission shall be achieved from accurate machine cut **spur/helical gears at each stage if needed**. All gears in gear train shall be anti-friction bearing mounted.
- b. **Bearings:** All supported / gears / shaft / wheels shall be mounted on the anti-friction ball / roller bearings. The bearings shall be SKF / FAG only.
- c. **Chain Drum:** The chain drum shall be of suitable carbon steel fabricated seamless construction, having grooves machined to suit chain.
- d. **Chain Guide:** A chain guide shall be provided to ensure that the chain is held in its grooves at all times and cannot get entangled.
- e. **Load Chain:** Load chain shall be provided with an appropriate factor of safety (minimum 6) shall be used.
- f. **Hand Chain:** Zinc coated hand chain for lifting of load shall be provided.

3. DOCUMENTATION:

- 3.1. Supplier shall furnish 2 numbers of bound copies of instructional manuals for installation; operation and maintenance of all equipment furnished by him along with instruction manual for use of spare parts recommended with special emphasis on troubleshooting. Each manual shall consist of one set of above mentioned approved Drawings and catalogues/ technical literatures for the bought out components.
- 3.2. The instruction manuals shall be corresponding to the equipment supplied and not be general in nature. The supplier shall submit two preliminary instructional manuals to the purchaser before the submission of actual manuals and one approved copy will be provided to the supplier for preparing final instructional manuals.

SECTION-II TESTING & CERTIFICATION

1. TEST CERTIFICATES AND TESTING OF CHAIN PULLEY BLOCKS:

1.1. TEST CERTIFICATES:

- 1.1.1. Following test certificates shall be furnished by the supplier and approved by the purchaser.
 - (a) Manufacturers test certificates for mechanical properties and chemical compositions of material for hooks, wire ropes, rope drums, wheels, gears and pinions, shafts and axles etc.
 - (b) Rated and overload test of the chain pulley block on trolley.

1.1.2. In the absence of test certificates from the manufacturer of the materials the material shall be tested as per the specifications and approved by the purchaser prior to the starting of fabrication.

1.2. TESTING:

1.2.1. The following tests on complete unit and chain pulley block in presence of purchaser's representative shall be carried out at manufacturers works.

(a) Functional Test: Checks for functioning of unit and safety features at rated load & 25% overload.

(b) Hook Test: Hook shall be tested as per relevant IS standard.

1.2.2. Following tests on the unit shall be carried after erection at site. In case installation & commissioning is included in the scope in Purchase Order.

Functional Test: After erecting the unit at site, the same shall be tested at the rated load.

1.2.3. All the tests shall be carried out as per latest IS-3938 for hoists unless otherwise specified.

1.2.4. No distortion, permanent strain, damages or deformation of any part of the equipment to be supplied under this specification shall occur as a result of the above testing.

1.2.5. The supplier shall arrange the required testing and inspection instruments (including dead weights for load testing) for use at ex-works and at site.

SECTION-III INSTALLATION

1. After the completion of the fabrication & erection of the MS Shed, the chain pulley block should be installed at designated location as indicated in the **Annexure-I**.

Sukanta Singh
21/07/2019