हुगली कोचीन शिपयार्ड लिमिटेड
(भारत सरकार का उद्यम)
**HOOGHLY COCHIN SHIPYARD LIMITED**
(A Govt. of India Enterprise)

# TENDER NOTICE

Sealed competitive tenders are invited from experienced Contractors for the scope of work given below. Tenders are to reach the undersigned on or before the date and time mentioned below. Please refer scope of supply/Technical specification, General Terms and conditions and special terms attached.

| | |
|---|---|
| Tender No. & date | HCSL/CIVIL/TEN/2024/041 dated 19.11 2024 |
| Scope of Supply / Work | MODIFICATION OF SHED STRUCTURES AT HCSL, NAZIRGUNGE UNIT, HOWRAH (Detailed specification is enclosed separately) |
| Type of Tender | Two Bid |
| Last date & time of receipt of tender | 05.12.2024 at 15:00 Hrs |
| Date & time of opening of tender | 05.12.2024 at 15:30 Hrs |
| Probable Amount of Contract | Rs. 80.42 Lakhs (incl. GST) |
| Tender Cost | Nil |
| EMD | Rs.1,00,000/- (incl. taxes) |
| Completion of Work | **04 months** from the date of issue of Work order or site handing over whichever is later. |
| Officer-in -Charge | Name : Siddharth Mohanty<br>Designation : Manager- Marine & Central Services<br>Email : Siddharth.mohanty@hooghlycsl.com<br>Phone No : +91- 7489858690<br><br>Name : Subham Manna<br>Designation : Sr. Project Officer (Civil)<br>Email : subham.manna@hooghlycsl.com<br>Phone No : +91- 7003595364 |

**Tender reference should be clearly indicated on top of the respective envelopes.**

Sealed tenders addressed to The Manager (M& CS) shall be dropped in the "HCSL Tender box" located at HCSL-Howrah at Danesh Sk. Lane, Nazirgunge, Howrah -711109 or courier to HCSL-Howrah at Danesh Sk. Lane, Nazirgunge, Howrah -711109 by the due date and time. **Tender documents received after the due date & time will not be considered.**

**The bidder must visit the HCSL site before submission of the bid. The site visit slip must be submitted along with the tender document containing HCSL OIC signature.**

Signature and Seal of the Contractor (s)

**For HCSL**

1. **Minimum qualification criteria for participating in the tender will be as follows:**
   Successful experience as Civil Construction Company in the successful completion of at least **one (1)** similar **Civil Construction works** which includes **structural steel work, PEB shed etc** of nature and complexity comparable to the proposed construction work within the **last 07 years** from the date of issue of tender document. The value of the work should not be less than **Rs. 65 Lakhs**. (Satisfactory completion certificate from the Client for work done (Certified by client) should be submitted along with bid). For contracts under which the bidder participated as a joint venture member, only the bidder's share, by value, shall be considered to meet the requirements.

   Or

   Successful experience as Civil Construction Company in the successful completion of at least **two (2) similar Civil Construction works** which includes **structural steel work, PEB shed etc** of nature and complexity comparable to the proposed construction work within the last **07 years** from the date of issue of tender document. The value of each work should not be less than **Rs. 40 Lakhs** incl. GST. (Satisfactory completion certificate from the Client for work done (Certified by client) should be submitted along with bid). For contracts under which the bidder participated as a joint venture member, only the bidder's share, by value, shall be considered to meet the requirements.

   Or

   Successful experience as Civil Construction Company in the successful completion of at least **Three (3) similar Civil Construction works** which includes **structural steel work, PEB shed etc** of nature and complexity comparable to the proposed construction work within the last **07 years** from the date of issue of tender document. The value of each work should not be less than **Rs. 32 Lakhs** incl. GST. (Satisfactory completion certificate from the Client for work done (Certified by client) should be submitted along with bid). For contracts under which the bidder participated as a joint venture member, only the bidder's share, by value, shall be considered to meet the requirements.

   **Note: Similar work means, Civil construction works for State/Central Govt., Shipyards, MNCs, Heavy Industries etc. consisting of similar description of works within 07 years ending last day of month previous to one in which applications are invited.**
   **Contractor shall submit the valid proof like Work Orders, Invoice, Work Completion certificates, GSTR-1 for the work carried out against the work credentials.**

   i. The average Annual Turnover of the bidder should be **at least Rs. 24 lakhs** during the last three preceding years.

ii. The bidder must have experience of minimum 3 years in successful completion of **similar work** of nature and complexity comparable to the proposed contract ending last day of month previous to the one in which applications are invited.

iii. Audited Balance sheets showing turnover, Profit & Loss account of the firm for the preceding 03 years (FY 2020-21, 2021-22, 2022-23) should be submitted along with the application for prequalification).

iv. The Tenderer should enclose copy of EPF (if applicable), ESI (if applicable), Trade license, PAN, GST registration certificate, Income tax returns for last three years. (A copy of the same shall be submitted along with the application for issue of tender document)

v. Offers from joint ventures/consortium will not be accepted.

vi. Net worth of the contractor must be positive as per the latest balance sheet. (MSE/NSIC will get exemptions)

Each page of the tender document along with all other submitted documents must be duly signed by the Authorized signatory with Bidder's signature and seal.

The tender documents can be downloaded from CSL website www.hooghlycsl.com or www.cochinshipyard.in or www.eprocure.gov.in. The tender documents are available on afore mentioned links. All corrigenda, addenda, amendments and clarifications to this tender will be hosted in the website www.hooghlycsl.com or www.cochinshipyard.in or www.eprocure.gov.in. Bidders shall keep themselves updated with all such developments till the last date and time of submission of tender.

**Tender administration**: Tender procedure/administration/evaluation including correspondences will be done by M/s. Hooghly Cochin Shipyard Limited, Howrah and awarding of contract will be done by M/s. Hooghly Cochin Shipyard Limited, Howrah, West Bengal.

Officer - in - Charge for the above work:

Name : Siddharth Mohanty
Designation : Manager- Marine & Central Services
Email : Siddharth.mohanty@hooghlycsl.com
Phone No : +91- 7489858690

Name : Subham Manna
Designation : Sr. Project Officer (Civil)
Email : subham.manna@hooghlycsl.com
Phone No : +91- 7003595364

Signature and Seal of the Contractor (s)

**For HCSL**

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**Annexure-1**

## INFORMATION TO THE CONTRACTORS

***Contractors shall take notice on the following points for its strict compliance***

As the items are critically required, non-compliance of any of the following points will invite disqualification of the submitted offer without any further communication/ notice from this office in this regard.

1. For the consideration of the offer and its price bid opening, bidders should ensure the compliance of following points (which are mandatory in line with this particular tender) as stipulated in the general terms and conditions of enquiry and techno-commercial check list herewith.

    1. Eligibility Criterion
    2. Earnest Money Deposit (EMD)
    3. Liquidated damage
    4. Payment terms
    5. Validity of offer
    6. Security deposit
    7. Guarantee
    8. Risk purchase
    9. Pre-contract integrity pact
    10. Submission of relevant catalogue of equipment offered (if any)
    11. Self-certified copy of MSE/NSIC certificate, if applicable.
    12. Ruling percentage
    13. Price bid to be submitted in the price bid format attached at annexure-20
    14. Unpriced bid as per annexure-20 to be submitted along with techno commercial bid (Cover-A) with details like percentage of taxes & duties applicable & details like quoted/nil/included to be mentioned for each line item.
    15. The Tenderer should enclose copy of PAN, GST registration certificate, Income tax returns for last three years. (A copy of the same shall be submitted along with the application for issue of tender document).

    It is reiterated that offers submitted without compliance of any one of the aforesaid points will not be considered for its evaluation and summarily be rejected on commercial background without any further clarification/ notice/ communication in this regard from M/S Hooghly Cochin Shipyard Ltd., even though the offer is technically acceptable.

1.01 **General Information**

**Place of Work:**

Hooghly Cochin Shipyard Limited
Satyen Bose Road, P.O. Danesh Sk. Lane,
Nazirgunge, Howrah–711109,
West Bengal, India

**Engineer –in – Charge** shall mean CEO, HCSL or the authorised representatives appointed by the CSL/HCSL.

1.02 **Tender Procedure**

Item rate tenders in two covers are invited from eligible Contractors for "MODIFICATION OF SHED STRUCTURES AT HCSL, NAZIRGUNGE UNIT, HOWRAH."

The schedule of quantities, tender drawings, specifications and commercial conditions of the contract are appended.

1.03 **Clarification Requests by Bidder**

The Bidder is fully expected to have read and clearly understood the bidding documents. It is the responsibility of the Bidder to ensure that all documents are included as per the contents page. Bidder shall examine the Bidding Document thoroughly in all respects and if any conflict, discrepancy, error or omission is observed, Bidder may request clarification up to 03 days prior to Date of opening of Tender. Such clarification requests shall be directed to the emails mentioned.

1.04 **Contact person for tender clarification:**

Name : Siddharth Mohanty
Designation : Manager- Marine & Central Services
Email : Siddharth.mohanty@hooghlycsl.com
Phone No : +91- 7489858690

Name : Subham Manna
Designation : Sr. Project Officer (Civil)
Email : subham.manna@hooghlycsl.com
Phone No : +91- 7003595364

1.05 Tender shall be submitted in two separate sealed covers as given below super scribing the name of work, address of Accepting Authority and the address of the Tenderers. These 2 covers shall be sealed within 1 larger cover.

**Cover A.**

a. Inside the cover-A two separate covers should be there consisting of 'EMD within a separate envelop 'Cover-1'. 'technical eligibility criteria related documents, NEFT, undertakings and declarations, etc. within another separate envelop 'Cover-2' and
b. Duly filled, signed and sealed tender document and unpriced commercial Bid ("PART-1" original issued by HCSL plus two Duplicate hard copies).
c. Copy of PAN & GST registration certificate.
d. Power of attorney or authorization with seal of the company in favour of persons signing the bid.

e. EMD (in separate envelop within the Cover-A).

f. Copy of un-priced price bid (attached), Annexure-20.

**Cover B.**

a. Quoted Price Bid (original issued by Hooghly Cochin Shipyard Ltd) duly signed and sealed in the prescribed format, Price Bid Format Annexure-20 (there shall not be any clause added by the tenderer in the price bid, price bid with any additional clause/conditions etc will be summarily rejected).

1.06 **Short Description of Work**

The work involves 'MODIFICATION OF SHED STRUCTURES AT HCSL, NAZIRGUNGE UNIT, HOWRAH.' This is a **turnkey job;** all the equipment, materials and manpower required for the satisfactory completion of the project should be supplied and installed by the contractor. The work in general shall be carried out as per the enclosed technical specifications. All Work shall be executed as per specifications enclosed along with tender. If specification is missing for any of the works, same shall be executed as per relevant IS Standards amended upto date with all correction slips and as directed by the Engineer-in Charge. The design has to be approved by the Engineer in Charge prior to production activities.

1.07 The Cover-A of tender (Technical Bid) will be opened on 05.12.2024, 15.00 Hrs at the HCSL Office, Nazirgunge unit, Howrah. After evaluation of the technical documents (Cover-A). The responsive price bids (Cover-B) will be opened with the prior intimation to the technically acceptable bidders.

1.08 After opening the price bid, the rates will be compared, if the rates given in figures and in words differ, the lower of the two, only will be accepted. If the rate and amount differ for a particular line item/s, then the Unit rate of that particular item/s will be taken for evaluation.

In case of ambiguities in the quotes by the contractor, the following procedure will be followed:

a) When the amount of an item is not worked out by the contractor or it does not correspond with the rates written either in figures or in words, then the rates quoted by the contractor in words will be taken as correct.

b) When the rate quoted by the contractor in figures and in words tallies but the amount is not worked out correctly, the rate quoted by the contractor will be taken as correct and not the amount.

c) In the event of NO rate has been quoted for any items, leaving space both in figures, words, and amount blank, it will be presumed that the contractor has included the cost of this/these items in other items and rate for such items will be considered as ZERO and work will be required to be executed accordingly without rates.

1.09 Letter of intent (LOI) will be issued to the successful tenderer before the issue of the work order. LOI means an assurance of work order to the contractor by letter or e-mail in accordance with provisions contained therein. This Letter of Intent will constitute the formation of contract.

1.10 HCSL reserves the right to conduct negotiations with L1 Contractor to have possible reduction from the original offer or if the condition so warrants. The bidder shall attend the negotiation meeting in time upon intimation to them by HCSL.

1.11 Before commencing the work, the contract and also execute an agreement with in fifteen days from the date of receipt of work order for the work in the required non-judicial stamp paper in the format given as Annexure– 11 "Format of Contract Agreement" given by HCSL.

1.12 Tenders not properly filled or generally not complying with the conditions are to be rejected.

1.13 The Tenderers shall quote their most competitive rates against each item of the Schedule of quantities.

The rate thus quoted will be deemed to include the cost of all transportation, insurance, levies, royalties, overheads, contingencies, profits, etc. and the quoted price shall be all inclusive. The total contract price shall also be worked out and entered in. The rates quoted for the successful completion of the total works under this tender shall be fixed and firm and no escalation or variation will be allowed during the pendency of the contract on any account.

1.14 If the tender is made by an individual, it shall be signed with his full name and his complete address shall be given. If it is made by a partnership firm, it shall be signed by a partner of the firm who shall sign with his own name and give the name and address of each partner of the firm and attach a copy of 'Power of Attorney' authorizing him to sign on behalf of the other partners. A certified copy of the 'Registered Partnership Deed' shall also be submitted along with the tender.

If the tenderer is a Company, the authority of the signatory to sign on behalf of the Company and the **Memorandum and Articles of Association** shall be submitted.

It is reiterated that offers submitted without compliance of any one of the aforesaid points will not be considered for its evaluation and summarily be rejected on commercial background without any further clarification/ notice/ communication in this regard from M/S Hooghly Cochin Shipyard Ltd., even though the offer is technically acceptable.

1.15 EMD (Earnest Money Deposit):

i. Tenderers shall deposit an amount of **Rs 1,00,000/- (One Lakh Sixty Thousand only)** as Earnest Money Deposit (EMD) along with the tender.

ii. The EMD can be remitted in the form of Demand Draft (DD) / Banker's Cheque / Fixed Deposit Receipt (FDR)/ Bank Guarantee drawn in favour of "Hooghly Cochin Shipyard Limited" payable at Kolkata and shall be valid for a period of 6 (Six) months from the due date of opening of Techno-commercial Bids from any Nationalized/ Scheduled Bank or paid online through e-gateway of -

**UNION BANK OF INDIA**
**SHIBPUR-HOWRAH BRANCH**
**ACCOUNT NO: 756905010000104**
**IFSC CODE: UBIN0575691**

iii. EMD furnished by all contractors except the lowest tenderer will be released after issuing work order and submission of SD and its acceptance by the contractor to whom the work is awarded. Except L2, all other bidders EMD could be released earlier.

iv. EMD of the successful tenderer will be refunded after remittance of the security deposit and acceptance of the order. EMD of L2 can be released after the issuance of work order to L1.

v. The Earnest Money Deposit (EMD) may be forfeited if: -
   - **a.** The bidder withdraws, amends, impairs, or derogates from the tender or agreed conditions in any respect within the period of validity of their offer.
   - **b.** Non-acceptance of work order.
   - **c.** Bidder after accepting the work order fails to provide services.

vi. Micro and Small Enterprises (MSEs) as defined in MSE Procurement Policy issued by Department of Micro, Small and Medium Enterprises (MSME) or are registered with the Central Purchase Organisation or the concerned Ministry or Department are exempted from submission of EMD.

**TENDERS RECEIVED WITHOUT EMD or EMD furnished not as per HCSL format in case of BG will be summarily rejected.**

1.16 **Performance Bank Guarantee:**

The successful Bidder should furnish 5% of contract value as Performance Security within 14 days from the date of issue of Work Order. Performance guarantee should be furnished in the form of an irrevocable Bank Guarantee (BG) enforceable and en cashable at Kolkata, drawn from any scheduled bank operating in India. The BG furnished towards the Performance Security shall be valid for a period until a date 30 days from the day of expiry of the defect liability period stipulated as per the terms of the contract. Performance security shall not accrue any interest. Performance Security will be released / refunded to the Contractor after 30 days from the date of completion of Defect Liability / warranty period of the work. Bank guarantee should be submitted only in the format enclosed at Annexure-11.

1.17 **Security Deposit:**

Security Deposit SD) shall be at 5% of the contract value and shall be recovered from the running account bills. The total amount thus deposited towards SD will be retained as security for the due and proper fulfilment of the contract and will not carry any interest. Such deposit shall be forfeited on failure to perform or non-fulfilment by the Contractor of the terms and conditions of the contract. The contractor has to make good all defects during the defect liability period at his own cost. The Security Deposit deposited shall be released on satisfactory completion of **02 years of defect liability period**. After 1 year, half SD may be released as per approval by Engineer-in-charge.

1.18 The Contractor is the employer of all the worker's engaged for this work and should therefore take all required registrations, EPF & ESI (if applicable), insurance cover, etc. and pay amount due to labour welfare funds constituted by the Union Government and Government of West Bengal from time to time.

1.19 All statutory deductions including income tax at source, workers welfare fund at the rates applicable shall be made from the amount eligible to the Contractor in each part bill at current rates. Any tax omitted to be deducted in any part bill shall be deducted in the subsequent bills/final bill or from any amount due to the Contractor.

1.20 **Period of Validity**

The tender shall remain valid for acceptance for a period of 90 days from the date of tender opening. Any attempt on the part of the Tenderers or their agents to influence the Shipyard in their favor by any means of canvassing will disqualify the Tenderers and the tender submitted will be considered as void.

HCSL holds the right to increase the validity of the tender.

1.21 **Quantum of Work**

i. A schedule of approximate quantities for various items accompanies this tender. It shall be definitely understood that the Client do not accept any responsibility for the correctness or completeness of this schedule in respect of items and quantities and this schedule is liable for alteration by deletions, deductions or additions at the discretion of the Client without affecting the terms of the contract.

ii. The Client reserves the right to increase or decrease the quantum of work at site without assigning any reason. The Contractor shall carryout the works at the rates accepted.

iii. Variations in the quantities put to tender will not be the basis for any claim or disputes. The rates agreed by the Contractor shall hold good for any amount of variation in the quantities and no claims whatsoever will be entertained on this

amount. The Contractor shall carry out all works as directed by the Client at the same agreed rates.

1.22 **All Inclusive Rates**

The Contractor's rate shall be fixed & firm and shall include the cost of transportation of material to the site, taxes, duties, labour cess, GST etc. The rates quoted by the Contractor shall be firm throughout the contract period and there shall be no upward revision of the rates quoted by the Contractor for any reasons whatsoever. Basic rate should be all inclusive and GST shall be added separately. Any new Taxes, levies, duties imposed after signing the Contract shall be reimbursed by the Client on production of documentary evidence. However, any increase in the duties & taxes during construction because of delays in the completion of work attributed to the Contractor shall be to the Contractor's account.

1.23 **Interpreting Specifications**

If any difference is found in different parts of the tender documents, the following will be in order of precedence:

i. Contract Agreement as per pro-forma.
ii. Work order
iii. Any agreed variation between the Employer and the Contractor including but not limited to minutes of negotiation, amendments of specifications and/ or specifications
iv. Accepted Schedule of Rates/ prices
v. Drawings
vi. Technical specification
vii. General Conditions of the Contract (GCC)
viii. Instruction to Bidders & Notice inviting tender
ix. All materials, literature, drawings, data, duly filled forms and formats and information of any sort given by the Contractor and approved by Employer as well as the one given by the Employer to the contractor.

If the bidder discovers any ambiguity omissions, errors, faults and other defects in the Drawings or in other documents, he shall immediately notify the same in writing to the HCSL, who will resolve the ambiguity or correct the error and will notify the Contractor of the interpretation to be adopted.

However, all of the above shall be read in conjunction while operating any item. The order of precedence shall only govern in case of any discrepancy.

1.24 No alterations shall be made by the tenderer in the Notice Inviting Tender, Instructions to the Contractors, agreement form, Conditions of the contract, Drawings and Specifications, and if any such alterations are made or any conditions attached, the tender is liable to be rejected.

1.25 The acceptance of a tender rests with the Authorised Representative of the Client who does not bind himself to accept the lowest tender and reserves to himself the authority to reject any or all the tenders received without assigning any reason(s) what's ever.

The authorized representative of the Client reserves the right of accepting the whole or any of the tenders received and the tenderer shall be bound to perform the same at the rates quoted.

1.26 The work shall be carried out under the direction and supervision of the Client or their representative at site. On acceptance of the tender, the Contractor shall intimate the name of his accredited representative who would be supervising the construction and would be responsible for taking instructions for carrying out the work.

1.27 The Client's decision with regard to the quality of the material and workmanship will be final and binding, any material thus rejected shall be immediately removed by the Contractor and replaced by materials as per specifications and standards.

1.28 **Defects Liability Period**

The contractor has to guarantee the material and workmanship for a minimum period of **TWO YEARS (24 months)** from the date of commissioning and acceptance of the same by HCSL against defective workmanship/inferior quality of materials used. During this period any part/Items found defective shall be repaired/replaced by the Contractor free of cost any trouble or defect originating with the workmanship of any facilities installed arises at any time up to **24 months** from the date when the system is taken over after commissioning, and the CONTRACTOR is notified thereof, the CONTRACTOR shall at his own expense and as quickly as possible make such alteration / repairs and replacements as may be necessary to comply with the above guarantees and shall reimburse any costs and expenses incurred by HCSL in connection with such trouble or defect. If the contractor fails to take action as above as HCSL shall direct, HCSL shall be free to take corrective/alternative action at the contractor's cost and risk within a reasonable time.

1.29 **Delays in Commencement**

The Contractor shall not be entitled to any compensation and/or damages for any loss suffered by him on account of delays in commencing whatever the cause for such delays may be. Similarly, the Contractor shall not be entitled to claim any amount from Client for delays in completion of work.

If the contractor abandons the contract or fails to commence the work in time or suspend the work for long duration (10 days) or delay the progress of the works without valid reasons acceptable to HCSL or labour dispute with their workers or poor safety records or poor quality of work or workmanship etc. is noticed, then HCSL will terminate the contract and arrange the work at the risk and cost of the terminated contractor. In such

case, security deposit along with Performance Guarantee submitted by the contractor shall be forfeited forthwith.

1.30 The Contractor should inspect the source of materials, their quality, quantity and availability. All materials must strictly comply with the relevant specifications.

1.31 The Contractor must co-operate and co-ordinate with other Contractors involved in other works at the site.

1.32 **Period of Completion**

i. The time for completion of work is **04 months** which shall be reckoned from the date of the work order or handing over of site whichever is later. The time allowed for carrying out the work as mentioned above shall be strictly observed by the contractor. The work throughou the time period shall be proceeded with due diligence keeping in view that time being deemec to be the essence of the contract.

ii. The completion of work may entail working in monsoon period/ rainy season also. The contractor shall take such events into consideration while quoting for the work. The contracto must maintain sufficient labour force for the timely completion of work as per the prescribec schedule. No extra rate will be admissible for work in monsoon/rainy season. During monsoor and other period, it shall be the responsibility of the contractor to keep the work site free from water at his own cost and ensure safety of their workmen and materials.

1.33 **Liquidated Damages**

i. Liquidated Damages will be levied at the rate of 0.5% of the value of contract per week of delay involved subject to a maximum of 10% of the value of the executed contract value.

ii. The owner shall be at liberty to adjust or deduct the said amount of liquidated damages (not the way of penalty) from any amount due to the contractor including Security Deposit.

iii. When the delay is not a full week or in multiples of a week and involves a fraction of a week, the LD payable for that fraction shall be proportional to the number of days involved.

1.34 **Payment Terms**

1.34.1 Payment terms for the project shall be as follows: -

Payment can be made on the clear RABs without corrections submitted by the contractor. HCSL shall carry out an initial scrutiny to check the eligibility of the RABs. HCSL has the right to reject the bill if found ineligible. Certified amount will be paid only after quality of work is certified & after scrutiny and crosschecking of the bill by HCSL. The contractor shall submit running account bills in two copies along with joint measurements. The contractor shall inform HCSL well in advance for recording the joint measurement. All statutory taxes, as per the rules prevailing in force at the time of payment of bills will be deducted while making payment or when crediting the amount to the account. After completion of all the works, the contractor has to clear all the debris and make the area neat and tidy at the site. The final bill shall be paid only after the certification regarding quality of work and overall certification by HCSL after obtaining all applicable approvals of HCSL. The final bill shall be paid within two months from the date of submission of claim (bill) by the contractor or completion of all the items of work or date of acceptance of the bill by both parties whichever is later. Contractor shall indicate details like PAN, GST details etc. required for processing payment. Payments will be made through NEFT/RTGS/Cheque mode and necessary details shall be furnished by the contractor. HCSL reserves the right for the deduction of taxes and duties as applicable from the bill or invoice.

1.34.2 The quantities given in the schedule of work are only approximate and payment will be made as per actual measured quantities of work executed at site.

1.34.3 All the payments are made, after deducting there from the amounts already paid, the security deposit, income tax, workers welfare fund and other amounts as may be deductible or recoverable in terms of the contract.

1.34.4 The amount admissible for interim bills shall be normally paid within a month from the date of receipt of the bill by the Engineer-in-charge after such verification as is considered necessarily.

1.35 **Measurement**

The Contractor or his representative shall accompany the Client or their representative taking measurements and shall agree to the measurements taken on spot. If the Contractor fails to accompany the Client for measurements, then he shall be bound by the measurements taken by the Client.

1.36 **CHANGES**

HCSL reserves the right to issue change orders which provide for changes in the scope of work required under WORK ORDER, and for equitable adjustment in the price hereunder.

Any amendment to WORK ORDER shall be made in writing by HCSL and all other terms and conditions of WORK ORDER shall remain unchanged.

1.37 Ruling Percentage" shall mean the percentage by which the amount of the works actually awarded is higher or lower than the corresponding departmental estimated amount of the works. Ruling percentage shall be defined based on the departmental estimated amount of works and amount of the works actually awarded.

1.38 The quantities given in the Bill of quantities are indicative only. Variation is permitted in quantity of each individual item. The rates quoted shall be firm for such variation up to the limit of 25% in respect of individual items and up to 10% of the Contract Value. In case the variation results in the total Contract Value exceeding the prescribed percentages, the revision of rates, if any, shall be applicable only for that portion of contract carried out in excess of the permissible percentages. The rate payable shall be determined as given below:

a) Rates and prices of relevant item in the Delhi Schedule of Rates 2021 plus cost index applicable for Kolkata/Howrah, West Bengal plus/ minus Ruling Percentage.

b) Market rates of material and labour, hire charges of plant and machinery used plus 15% for overheads and profits of Contractor. Contractor has to furnish site observed data jointly certified by contractor, employer for computing local market rates along with supporting documents such as tax invoice of materials procured, labour deployment log book, work order/purchase order showing hire charges of plant and machinery, work order showing labour rates etc. to employer.

Whichever is lower, but not less than the rate in the Bill of Quantities.

No claims shall be entertained from the contractor for any downward variation. Contractor's concern is for negative variation as their cost of mobilization, set-up charges etc. does not get recouped in case of reduction in quantities.

1.39 **Recovery of dues from the contractor**

HCSL shall have recourse to Contractor for any costs, claims, demands, proceedings, damages and expenses whatsoever arising out of or in connection with any failure of

Contractor to perform any of his responsibilities / obligations under the terms of the order. Any amount due from Contractor as per the order shall be deducted from money due or becoming due to Contractor or may be recovered as provided for in the contract.

1.40 **Permits and certificates**

CONTRACTOR shall procure, at his expense, all necessary permits, third party approval certificates, and licenses required by virtue of all applicable laws, regulations, ordinances and other rules in force at the place where any of the work is to be performed, and CONTRACTOR further shall hold HCSL harmless from liability or penalty which might be imposed by reason of any asserted or established violation of such laws, regulations, ordinance or other rules.

1.41 Tender documents, Terms and conditions and Drawings should be signed and sealed in all pages by the contractor and accompanied along with the tender.

I / We hereby declare that I/we have read and understood the above instructions and the terms and conditions mentioned above are binding on me/us.

Signature and Seal of the Contractor (s)

**For HCSL**

**Annexure-2**

## GENERAL CONDITIONS OF CONTRACT

1. The bidders are expected to familiarize himself, labour situation, wages and benefits applicable to labours, working hours, prior to quoting the rates. The submission of a bid by bidder implies that he has made himself aware of all the above situations and conditions. Any subsequent claim on this account will not be entertained.
2. All applicable taxes, duties, transportation and insurance etc. except GST should be included in the rate quoted, unless specified otherwise. HCSL reserves the right for the deduction of taxes and duties as applicable from the bill or invoice.
3. Tender documents issued are not transferable. Tender documents issued/downloaded shall be submitted wholly without altering any part.
4. The bidder shall not have been debarred / black listed by HCSL or by any of the Public Sector Undertaking or Government department etc. Bidders shall produce a self-declaration in this regard as attached.
5. Bidders are instructed to carefully go through the tender documents and shall agree to HCSL terms and conditions, specifications, scope of work etc and quote their offer accordingly. Bidders shall produce a self-declaration in this regard as per the format enclosed with the tender documents. All the pages of tender documents shall be signed and duly sealed by the bidder as a token of the acceptance of conditions stated therein.
6. Bidders shall quote total amount in figures and in words. Corrections and additions if any must be attested/ duly signed by the bidder. In the case of error in multiplication/addition in amount calculated, the rate quoted will be considered as correct and the amount will be calculated accordingly. Conditional rebates & discounts, incomplete/ambiguous offers are likely to be rejected.
7. Late bid will be rejected and HCSL will not be responsible for any postal delay /non-receipt of bid on any account of loss in transit.
8. Tender opening shall be carried out at the designated date, time and location as specified in the Notice Inviting Tender. It may please be noted that, if any of the dates indicated in the tender notice is declared a public holiday, the dates shall be extended to the next working day.
9. The price bids will be evaluated based on the lowest offer on the total amount such as basic price, GST and all other applicable taxes obtained from eligible and qualified valid bids for opening the price bids. (on lowest total landed cost to HCSL)
10. HCSL reserves all the rights to reject any or all tenders without assigning any reason. Acceptance of a bid will rest with the competent authority, who does not bound himself to accept the lowest

tender and reserves the right to reject any or all of the tenders received, without assigning any reason for the same.

11. Throughout the bidding documents, the terms "bid" and "tender" and their derivatives ("bidder / tenderer", "bid /tender", "bidding / tendering", etc.) are synonymous, and day means calendar day. Singular also means plural.
12. HCSL has the right to award work, part or in full to a single party or multiple parties as deemed fit. Also, HCSL shall have the right to issue work order & supply order separately.
13. During the evaluation of tender, HCSL may seek clarifications from the bidders. Clarification if any shall be given in writing/e-mail. HCSL decision will be final and binding on the bidder.
14. Bringing in new conditions after the tender opening will not be allowed. Under no circumstances, will an enhancement of quoted rate be allowed, once the offer is accepted and an order is placed. Withdrawal of the quotation after it is accepted or failure to make the supply/execution within the stipulated delivery/completion period will entail cancellation of the order and forfeiture of EMD/Performance security, if any/ and or risk purchase.
15. For items not existing in the Bill of Quantities (Extra work), rate payable shall be determined by methods given below and, in the order, given below and whichever is lower shall be paid;
    a. Rates and prices of relevant item in the Delhi Schedule of Rates 2021 plus cost index applicable for Kolkata/Howrah, West Bengal plus/ minus Ruling Percentage.
    b. Market rates of materials and labour, hire charges of plant and machinery used, plus 15% extra for overheads and profits of Contractor. Contractor has to furnish site observed data jointly certified by contractor, employer for computing local market rates along with supporting documents such as tax invoice of materials procured, labour deployment log book, work order/purchase order showing hire charges of plant and machinery, work order showing labour rates etc. to employer.
16. For items not listed in the bill of quantities, but can be considered as Substituted items, rate payable shall be determined as below:

    Rates and prices derived from the accepted rate of similar items in Contract. If there is delay in the Employer and the Contractor coming to an agreement on the rate of an Extra work/ Substituted items, rates as proposed by the Employer shall be payable provisionally till such time the rates are finally determined or till such date rates are mutually agreed.
17. HCSL shall without prejudice to any right or remedy is at full liberty to forfeit the said EMD/Cost of Tender absolutely if the tenderer withdraws his tender before the validity period or makes any modifications in the terms and conditions of the tender which are not acceptable to HCSL. After the issue of work order by HCSL, failing /refusing to execute the agreement/ start the work, the tenderer shall be deemed to have abandoned the contract and such an act shall amount to and

be construed as the contractors calculated and the wilful breach of the contract, HCSL shall have full right to take suitable action against the firm together with forfeiture of Earnest Money Deposit.

18. Security deposit/Performance guarantee will be released only after attending all the defects pointed out to the contractor during the defect liability period/guarantee/warrantee period. Any work which are not attended/replaced during the defect liability period within a reasonable time given by Officer in charge /Engineer, the work will be carried out at the risk and cost of the contractor by HCSL.
19. The site will be available for work during office hours (08:30 Hrs to 17:30 Hrs.) only. However, if the Contractor wishes to carry out the work beyond normal working hours or on holidays, he should get specific approval from the Officer-in-Charge.
20. The work shall be inspected by the Officer –in – Charge /Engineer, his authorised representative deputed by the Officer –in – Charge. Officer–in – Charge /Engineer will have full liberty to impose penalties for the violation of any of the agreement clauses.
21. **General conditions on work part:**

21.1. Hooghly Cochin Shipyard Limited reserves the right to make minor alterations, additions or substitutions to the existing specifications/scope of work, if found necessary during the progress of work and the contractor is bound to carry out the work without any additional cost, as per such altered specifications.

21.2. The completion of work may entail working in monsoon period/ rainy season also. The contractor shall take such events into consideration while quoting for the work. The contractor must maintain sufficient labour force for the timely completion of work as per the prescribed schedule. No extra rate will be admissible for work in monsoon/rainy season. During monsoon and other period, it shall be the responsibility of the contractor to keep the work site free from water at his own cost and ensure safety of their workmen and materials.

21.3. All labour, skilled or unskilled shall be provided by the contractor. Settling any dispute with the labour, subcontractor, labour union shall be the sole responsibility of the contractor. Workers engaged for works should have sufficient knowledge and experience in the respective fields.

21.4. The contractor should take insurance for the men and materials till the handing over of the entire system to Yard. The contractor is bound to meet the expenses or defence of any action of legal proceedings that may be brought by any person for injury sustained owning to neglect of safety precaution and to pay damages and costs which may be awarded in consequence as per rules in force. It is the responsibility of the contractor to ensure that workmen engaged in the work should wear safety appliances like helmet, safety shoes, safety belts etc. and should strictly comply with Yard Safety Rules and Regulations in vogue. For obtaining entry permission of workmen into the company premises, the contractor has to furnish the identity proof of those persons to be engaged [Passport/Electron Identity card etc. If required, police clearance

certificate shall also be submitted. They should carry / display the pass issued by Yard authorities during the entire span while in Yard. The contractor has to abide by all relevant Labour Regulations and enactments as applicable to the contractor and his/their workmen and as amended from time to time without causing or claiming any responsibility or liability thereof to the company.

21.5. The workmen are strictly banned from use of any kind of Narcotics drugs / Alcohol /smoking etc. inside Yard and any illegal activity by the work men should be reported to the Officer-in- charge without delay and the contractor shall remove such persons from Yard premises.

21.6. The Contractor should furnish their Registration code, ESI/EPF (if applicable) /PAN/GST numbers issued by competent authorities if any. The supporting documents for the same may have to be submitted to HCSL in the event of requirement. HCSL reserves the right for the deduction of ESI/PF from the bill or invoice, if required.

**21.7. Tax elements**

a. The tax rate of the Goods and Services would be as per the Government of India published GST rate schedule for goods & services. The rates have been mapped with HSN& SAC in the rate notification issued by the government. The rate schedule should be referred to identify the applicable rate.

b. GST ID should be mentioned.

c. The invoices should be as per the provisions of GST law. The invoices should mandatorily contain the HSN code/SAC and GSTIN number along with other particulars. The GST charged (CGST&SGST or IGST) should be separately indicated in the invoice.

d. Tax inclusive invoices will not be accepted.

e. All correction/rectification in the invoices should be done through Debit note/ Credit note only.

21.8. The work is to be arranged without affecting construction activities and to other agencies engaged in that area where works are to be carried out and shall be arranged with minimum hindrances. The work shall be carried out without damaging any of the existing structures/structures under construction/ underground pipelines or cables etc in the locality. If any damage occurs to the Yard property, by the contractor's operation shall be compensated / made good at contractor's risk and cost to the satisfaction of the Officer-in-charge of the works, failing which Yard will do the rectification work and the cost incurred will be recovered from contractor's bill or from security deposit. If contractor fails to clear the dispose/items, Yard is having the right to cleaning the premises and cost involved for the cleaning will be deducted from the contractor's bill.

21.9. The entire work should be carried out to the satisfaction of the Officer-in-charge/Engineer of the work. Decisions of the Officer-in-charge/Engineer will be final and binding to the contractor.

21.10. The workmanship shall be as per industrial standard in every respect both for the equipment supplied and for the installation carried out. The work should confirm to relevant Indian Standard Specification / other statutory rules wherever necessary/ applicable.

21.11. Arrangement of all necessary accessories shall be carried out by contractor for successful completion of work even though not specifically mentioned in the tender/ order. All tools, tackles, accessories and other materials brought into Shipyard for the work shall comply with statutory requirements and shall be declared.

21.12. Necessary storage space will be provided by Yard as per the prevailing rules subject to the availability of space. If not, contractor has to make necessary arrangements outside Yard premises at his own cost and risk.

21.13. All statutory requirements are to be followed by the contractor. Packing material used if any should be eco-friendly.

21.14. The contractor has to abide by the Contract Labour Act 1970 and rules there under and applicable State Contract Labour Rules and the Yard safety rules and regulations. It is the responsibility of the contractor to follow all safety rules and regulations in force, during the period of contract in Yard, and any violation of the same during the course of work will be at the risk and cost of the contractor and will attract penal action.

21.15. Necessary "Work in progress" boards shall be provided by the contractor at locations shown by the Officer –in – Charge/Engineer.

21.16. The contractor shall make arrangements for collection, preparing, forwarding and testing of samples (if required) at his cost as directed by the Officer –in – Charge /Engineer. The charges for testing to be borne by the Contractor.

21.17. Electrical connections issued to the Agency will be exclusively for their own use and any power sharing with other agencies shall be totally under the risk and cost of the agency to which power supply is allotted.

22. Bidders shall follow the Security instructions and HSE guidelines as enclosed with the Tender documents.

23. **Force Majeure Condition:** Should failure in performance of the contract or part there of arise from war insurrection, restrain imposed by Government, Act of Legislature of other statutory Authority or illegal strike (event like local strike/ hartal etc. in the yard, state or national), riot, legal lock out, flood, bad weather, fire, explosion, pandemic, epidemic, Act of God of any inevitable or unforeseen beyond human capacity which may be construed as reasonable ground for an extension of time. HCSL may allow such additional time as is mutually agreed, to be justified by the circumstances of the case. The occurrence/ cessation of force majeure situation is to be informed with documentary evidence within 15 days from the date of occurrence or cessation.

24. **Risk Purchase: -** If the contractor fails to complete the work, in time as per the terms in work order, HCSL shall have the following rights.

    **a)** To terminate the contract within 15 days of notice.

    **b)** To initiate alternative arrangements at the risk and cost of the contractor.

    **c)** HCSL reserves the right to terminate the work order at short notice in case the firm's performance is found not satisfactory with regard to the progress of work, quality, time factor, labour dispute with their workers, poor safety record and other violation of any contract conditions. No claim whatsoever will be entertained in this regard from the firm.

25. **Jurisdiction:** Any dispute(s) or differences arising out of or in connection with the Contract shall, to the extent possible, be settled amicably between HCSL and the contractor under mediation. Arbitration under provisions of Indian Arbitration and Conciliation Act shall not be applicable for this contract. Any disputes or differences arising under, out of, or in connection with the contract shall be subject to the exclusive jurisdiction of courts at Kolkata, West Bengal, India.

    General Conditions, technical specifications, Drawings etc. and all tender documents of HCSL is legally binding on the tenderer.

26. **USE OF APPROVED MAKES**

    List of approved makes for use in permanent works is mentioned in the tender. It will be deemed that the contractor has priced the respective items on the basis of the approved makes.

    Where a particular brand or make is specified in Bill of Quantities or Technical specification, such brand or make of material shall only be used in the works.

    Whenever equivalent is specified in the list of approved makes, permission for use of equivalent make shall be subject to contractor submitting proof of non-availability by way of valid regret letters from the makes listed along with the comparison table of properties of proposed make w.r.t specified make. Also, contractor shall submit sample of equivalent material along with test certificates and other documentary evidences to the Engineer- in –charge for approval. Decision of Engineer-in-charge on approving equivalent makes shall be final and binding on the contractor.

27. **SITE HANDING OVER**

    The site will be handed over in full. However, if this is not possible due to reasons that cannot be anticipated now, site shall be handed over in multiple phases based on the exigency of work. If there is any delay in work due to delay in handing over of site by HCSL which is not attributable to the contractor, proportionate extra time will be granted if found necessary by the Engineer-in-charge without any additional cost implication and the decision of Engineer-in-charge shall be final.

28. **MOBILIZATION ADVANCE**

    Mobilization advance shall not be applicable for this contract

29. **PRICE ADJUSTMENT**

    Price Adjustment shall not be applicable for this contract

## 30. SAFETY AND SECURITY PROVISIONS

The Site of Work is a protected area. Contractor shall strictly abide by the rules and regulations of HCSL regarding entry and exit of vehicles, materials, equipment's & contractor's workmen.

All the Contractors and subcontractors shall comply with the measures related to the Quality, Health, and Safety & Environment (QHSE) policy of HCSL. It is the responsibility of the contractor to follow all safety rules and regulations in force, during the currency of contract in HCSL, and any violation of the same during the course of work will be at the risk and cost of the contractor and will attract penal action. Upon any violation of Safety rules by the contractor, safety department will impose penalty of Rs 5,000/- per violation. Action for debarring the contractor also will be taken in case of repeated violations. Any accident caused due to safety violation and any damage to the Employer property suitable penalty will be imposed by HCSL including termination of contract, if required.

## 31. SUPPLY OF MATERIALS BY EMPLOYER IF CONTRACTOR'S FINANCIAL SITUATION WEAKENS

Notwithstanding anything contained to the contrary in any or all the clauses of this document, Employer in best interest of work may assist contractor in procurement of materials. if in the opinion of Employer, the financial condition of the contractor is adversely affecting progress of work. In such a scenario, Employer may procure and supply the materials to the contractor for smooth execution of work. Contractor shall place firm purchase order for procurement of materials and Employer shall effect payment directly to contractor's supplier. Selection of supplier, compliance of quality provisions, transportation and handling charges, storage charges, other procurement related matters etc. shall be managed and expenses borne by the contractor. In such a case, the actual amount incurred by Employer in procurement plus 10% of procurement charges towards Employer's overheads shall be recovered from the running account bill of the contractor. The decision and right to exercise this clause lies solely with Engineer-in-charge without prejudice to rights of the Employer under other clauses of the contract agreement and decision of Engineer-in-charge shall be final and fully binding on the contractor.

## 32. PROCUREMENT OF MATERIALS

The Contractor shall arrange from the very beginning adequate supply of materials, manpower, stock control items, spare parts etc. so as to ensure that delays or hold-ups do not occur in the commencement and execution of the works. Advance planning for procurement shall be ensured and buffer stock for critical construction items such as reinforcement steel, structural steel, cement, admixtures, aggregates etc. sufficient to carry out at least two weeks of work shall be ensured by the contractor for smooth progress of work.

All the materials to be used in work shall be subjected to the approval of Engineer-in-charge. The contractor shall apply sufficiently in advance with the samples of materials including the supporting test results from the government/NABL accredited laboratory and other documentary evidence from the manufacturer wherever applicable indicating the types of materials and their respective sources. The Engineer-in-charge also reserves the right to conduct additional tests at government laboratories or NABL accredited laboratory at his discretion. The cost of all such tests shall be borne by the contractor. The delivery of material at the site shall be carried out only after the approval of quality, grading and source of materials by Engineer–in-charge. The quality of all material once approved shall be maintained throughout the period of construction and periodic tests shall be carried out to ensure that it is maintained. The guarantees/warranty certificates for all major bought out items, fittings /fixtures are to be handed over to HCSL prior to use in permanent works.

## 33. DRAWINGS

General details of the works are shown on the drawings accompanying the tender document. During execution of the work the residual design, detailing and engineering, if needed, is to be carried out by the contractor at no extra cost to the Employer. However, if any other alternate form of construction is adopted in the permanent works, the successful contractor shall be responsible for detailed design & drawings. Such design, detailing & engineering shall be got approved by the contractor from the Employer.

Detailed working drawings for the designs executed by the contractor on the basis of which actual execution of the work is to proceed will be furnished by the contractor from time to time during the progress of the work and it shall be get approved by Engineer –in-charge.

As built drawings shall be submitted at the end of the project.

## 34. SITE RECORDS TO BE MAINTAINED BY CONTRACTOR

- Detailed work methodology for all major works – Detailed work methodology should be submitted by the contractor at least 14 days prior to date of commencement of respective work and contractor should ensure that no work is commenced without an approved method statement.
- Site records –RFI (Request for inspection), Engineer-in-charge approved formats for pour card, post pour, checklist for fabrication and erection, and inspection records for other works, BBS, consumption statements, Hindrance register etc.
- Quality related documents-Material testing reports (Proforma D) , plant and machinery permits and calibration certificates, procurement and consumption statements of the applicable items whatever applicable, NCR etc.

Statutory documents- Workmen attendance register/wage register, EPF/ESIC remittance details, key personnel attendance statement etc.

35. Following declaration signed by the contractor.

**"I/WE HAVE INSPECTED THE SITE AND GONE THROUGH THE TENDER TERMS AND CONDITIONS IN FULL AND UNDERSTAND AND ACCEPT THE SAME AND HEREBY TRULY CONFIRM AND DECLARE THAT THE RATES QUOTED IN THE PRICE BID ARE INCLUSIVE OF ALL TAXES, ALL CESS AND DUTIES BUT EXCLUDING GOODS AND SERVICES TAX. I / WE ALSO CONFIRM THAT COVER B (PRICE BID) DO NOT CONTAIN ANY CONDITIONS"**

**"I/WE HAVE NOT MADE ANY PAYMENT OR ILLEGAL GRATIFICATION TO ANY PERSON/AUTHORITY CONNECTED WITH THE BID PROCESS SO AS TO INFLUENCE THE BID PROCESS AND HAVE NOT COMMITTED ANY OFFENCE UNDER THE PC ACT IN CONNECTION WITH THE BID."**

Signature and Seal of the Contractor (s)

**For HCSL**

**Annexure-3**

## TECHNICAL SPECIFICATION OF MATERIALS AND WORKMANSHIP

1. The following technical specification, code of practice etc. referred herein is form a part of the Item Specification and work shall be executed accordingly. Items which are not covered under Technical Specification shall be carried out as per relevant IS Specification or BOQ Specification or as per manufactures specification or as directed by Engineer.
2. In case of discrepancy between technical specification and item specification provided along with Bill of Quantities, the Item Specification in Bill of Quantities shall prevail.
3. All the measurements shall be as per latest edition of B.I.S.
4. Contractor is required to submit a methodology of work in conforming to BOQ, technical specification, and conditions of contract and sound engineering practices and get it approved by Engineer before the commencement of any new work.

- **EARTH WORKS**

**General** –Contractor shall carry out the survey of the site before excavation and set properly all lines and establish levels for various works such as earthwork in excavation for levelling, basement, foundations, plinth filling, roads, drains, cable trenches, pipelines, etc. It is necessary to establish permanent bench mark at such point which will not be affected by subsequent work. Such survey shall be carried out by taking accurate cross sections of the area perpendicular to establish reference/grid lines at 5 m intervals or nearer as determined by Engineer based on ground profile.

The area to be excavated/ filled shall be cleared of fences, trees, plants, logs, slumps, bush, vegetation's, rubbish slush, etc., and other objectionable matter. If any roots or stumps of trees are found during excavation, they shall also be removed. The material so removed shall be disposed of as directed by Engineer. Where earth fill is intended, the area shall be stripped of all loose/soft patches, top soil containing deleterious matter/materials before fill commences.

In firm soil if the excavation is deeper than 2 m and in loose, soft or slushy soil, the width of the step shall be suitably increased or the sides sloped or shoring and strutting may be done as per the Engineer's instructions without any extra cost.

For excavation in trenches for pipes nothing extra shall be payable for the lift irrespective of the depth unless specifically mentioned otherwise in the Schedule of Quantities.

The trenches which are ready for concreting shall be got approved by the Engineer.

The excavated stacked earth shall be refilled in the trenches and sides of foundation in 200 mm layers and the balance surplus shall be first filled in layers in plinth and the remaining surplus shall be disposed of by uniform spreading within the site/outside the site as directed by the Engineer.

Adequate protective measures shall be taken by the Contractor to see that the excavation for the building foundation does not affect the adjoining structure's stability and safety. Contractor will be responsible if he has not taken precaution for the safety of the people, workers property or neighbor's property caused by his negligence during the constructional operations.

**Standards** -The following Indian Standard Codes, unless otherwise specified herein, shall be applicable. In all cases, the latest revision of the codes shall be referred to.

a) IS - 1200 Method of measurement of building works.
b) IS - 3764 Safety code for excavation work.
c) IS - 3385 Code of practice for measurement of Civil works

**Lead** –Lead for disposal of excavated material inside the site and at convenient places in the surrounding areas have been specified in the respective items of work and no other extra lead is intended.

**Classification** –Any earthwork will be classified under any of the following categories:

**All kind of Soils** –These shall include all kinds containing kankar, sand, silt, moorum and/or shingle, gravel, clay, loam peat, ash, shale, etc., which can generally be excavated by spade, pick-axe and shovel and which is not classified under ordinary rock, and hard rock defined below. This shall also include excavation in macadam and tarred roads and pavements. This shall also include rock boulders up to 200 dm3. Rubble masonry to be dismantled below ground level will also be measured under this item.

**Dewatering** –If water is met with in the excavations due to springs, seepage, rain or other causes, it shall be removed by suitable diversions, pumping or bailing out and the excavation kept dry whenever so required or directed by the Engineer. Care shall be taken to discharge the drained water into suitable outlets as not to cause damage to the works, crops or any other property. Due to any negligence on the part of the Contractor, if any such damage is caused, it shall be the sole responsibility of the Contractor to repair/restore to the original condition at his own cost or compensate for the damage.

- **BRICK FLAT SOLING**

  **General** –The brick work shall be classified according to the class designation of bricks used. The bricks shall be free from cracks and other flaws and nodules of free lime. The bricks shall have, as far as possible, plane rectangular faces and straight right-angle edges.

  **Laying** –Bricks shall be laid in English Bond unless otherwise specified. For brick work in half brick wall, bricks shall be laid in stretcher bond. Half or cut bricks shall not be used except as closer where necessary to complete the bond. Closers in such cases, shall be cut to the required size and used near the ends of the wall. Header bond shall be used preferably in all courses in curved plan for ensuring better alignment

  Header bond shall also be used in foundation footings unless thickness of walls (width of footing) makes the use of headers impracticable. Where thickness of footing is uniform for a number of courses, the top course of footing shall be headers.

  **Measurement** –Brick work shall be measured in square metres unless otherwise specified. Any extra work over the specified dimensions shall be ignored. Dimensions shall be measured correct to the nearest 0.01 m

  i.e. 1 cm. Areas shall be calculated to the nearest 0.01 sq.mt.

- **EARTH FILLING**

  **General** –Earth of filling type shall be of as excavated from work site.
  Earth filling in trench or others as directed shall be as specified in CPWD specifications. Except that consolidation shall be done by flooding with water. The surface of the consolidated earth filling shall be dressed to the required level or slope and shall not be covered till the Engineer has inspected and approved the sand filling.

  **Measurements**– The length, breadth and depth of consolidated earth shall be measured with steel tape correct to the nearest cm and cubical contents worked out in cubic metres correct to two places of decimal.

  **Rates** –The rates include the cost of material and labour involved in all the operations described in BOQ.

- **CONCRETE WORKS**

  **General** – The following codes and standards are made a part of the Specifications. All standards, codes of practices referred to herein shall be the latest edition including all applicable official amendments and revisions.

In case of discrepancy between this specification and those referred to herein, this specification shall prevail.

**Materials -**

**1)** IS 269: Specification for ordinary, rapid hardening and low heat Portland cement.

**2)** IS 455: Specification for Portland blast furnace slag.

**3)** IS 1489: Specification for Portland-pozzolana cement.

**4)** IS 4031: Methods of physical tests for hydraulic cement.

**5)** IS 650: Specification for standard sand for testing of cement.

**6)** IS 383: Specification for coarse and fine aggregates **from** natural sources for concrete.

**7)** IS 2386 (Parts I to VIII): Methods of test for aggregates for concrete.

**8)** IS 516: Methods of test for strength of concrete.

**9)** IS 1199: Methods of sampling and analysis of concrete.

**10)** IS 2396 (I) IS 5640: Flakiness Index of aggregates.

**11)** IS 3025: Methods of sampling and test (physical and chemical water used in industry).

**12)** IS 432(Part I & II): Specification for mild steel and medium tensile steel bars and hard drawn steel wire for concrete reinforcement.

**13)** IS 1139m: Specification for hot rolled mild steel and medium tensile steel deformed bars for concrete reinforcement.

**14)** IS 1566: Specification for plain hard drawn steel wire fabric for concrete reinforcement.

**15)** IS 4990: Specification for plywood for concrete shuttering work.

**16)** IS 2645: Specification for integral cement water-proofing compounds.

**Equipment -**

1. IS 1791: Specification for batch type concrete mixers.
2. IS 2438: Specification for roller pan mixer.
3. IS 2505: Specification for concrete vibrators immersion type.
4. IS 2506: Specification for screed board concrete vibrators.
5. IS 2514: Specification for concrete vibrating tables.
6. IS 3366: Specification for pan vibrators.
7. IS 4656: Specification for form vibrators for concrete.
8. IS 2750: Specification for steel scaffoldings

**Codes of Practice -**

1. IS 456: Code of practice for plain and reinforced concrete.
2. IS 457: Code of practice for general construction of plain and reinforced concrete for dams and other massive structures.
3. IS 3370 (Part I to IV): Code of practice for concrete structures for storage of liquids.

4. IS 3935: Code of practice for composite construction.
5. IS 2751: Code of practice for welding of mild steel bars used for reinforced concrete construction.
6. IS 2502: Code of practice for bending and fixing of bars for concrete

**Reinforcement**

7. IS 3558: Code of practice for use of immersion vibrators for consolidating concrete.
8. IS 3414: Code of practice for design and installation of joints in structure.
9. IS 4014 (Part I&II): Code of practice for steel tubular, scaffolding.
10. IS 2571: Code of practice for laying in-situ - cement concrete flooring

**Measurement**

11. IS 1200: Method of measurement of building works.
12. IS 3385: Code of practice for measurement of civil engineering works

**General** - The quality of materials, method and control of manufacture and transportation of all concrete work irrespective of mix, whether reinforced or otherwise shall conform to the applicable portions of this specification.

**Materials -** The ingredients to be used in the manufacture of standard concrete shall consist solely of standard type Portland cement, clean sand, natural coarse aggregate, clean water and admixtures.

**Cement**- While supplying Cement Contractor shall follow the points provided below:

a. The cement to be used shall be Grade OPC/PPC/PSC of approved grade 43 & 53 conforming to IS: 8112- 1989/IS: 1489 part I / IS 455 respectively unless otherwise mentioned. As far as possible, all the cement shall be obtained from a single source throughout the contract. Cement of different types shall not be mixed together. Different brands of cements or same brand of cement from different sources shall not be used without prior approval of the Engineer.

   The cement shall be delivered at site in original sealed bags which shall be labelled with the weight, date of manufacture, brand and type. Cement received in torn or hand-stitched bags shall not be used. For volumetric batching of, concrete, cement should be mixed only by box measurement. All cement should be fresh when delivered and shall be stored in an approved manner in stores built by the Contractor at his own cost. Set cement shall not be allowed to be used for any work. Site blending of the cement is not permitted.

b. A certified report attesting to the conformance of the cement to IS specifications by the cement manufacturer's chemist shall be furnished to engineer if demanded.

c. Cement held in storage for a period of sixty (60) days or longer shall be tested. Should at any time Engineer have reasons to consider that any cement is defective, then irrespective of its origin, and/or manufacturers test certificate, such cement shall be tested immediately at contractor's cost at an approved laboratory and until the results of such tests are found satisfactory, it shall not be used in any work. Contractor shall not be entitled to any claim of any nature on this account.

d. Contractor will have to make his own arrangements for storage of adequate quantity of cement.

e. The Engineer shall be regularly notified when supplies of cement are made to the site store. Copies of invoices shall be made available to the site engineer and a common cement register shall be kept at his office showing the supply stock and issue on a daily basis.

Minimum cement content for different grade of concrete shall be on the basis of relevant exposure conditions.

- For land area exposure is to be assumed as "severe"
- For marine area exposure is to be assumed as "very severe"

**Aggregates -** Aggregate in general designates both fine and coarse inert materials used in the manufacture of concrete. Fine aggregate is aggregate all of which passes through 4.75 mm IS sieve. Coarse aggregate is aggregate most of which is retained on 4.75 mm sieve. Specification mentioned against various item of work may also be followed.

All fine and coarse aggregates proposed for use in the work shall be subject to Engineer's approval and after specific materials have been accepted the source of supply of such materials should not be changed without prior approval of Engineer.

Aggregates shall, except as noted above, consist of natural sands, crushed stone and gravel from a source known to produce satisfactory aggregate for concrete and shall be chemically inert, strong, hard, durable against weathering, of limited porosity and free from deleterious materials that may cause corrosion of the reinforcement or may impair the strength and/or durability of concrete. The grading of aggregates shall be such as to produce a dense concrete of specified strength and consistency that will work readily into position without segregation and shall be based on the mix design and preliminary tests on concrete specified later.

**Sampling and testing**

Samples of the aggregates for mix design and determination of suitability shall be taken under the supervision of Engineer and delivered to the laboratory, well in advance of the scheduled placing of concrete. Records of tests which have been made on proposed aggregates and on concrete made from this source of aggregates shall be furnished to Engineer in advance of the work for use in determining aggregate suitability. The costs of all such tests, sampling, etc., shall be borne by contractor.

**Storage of Aggregates**

All coarse and fine aggregates shall be stacked in stock separately in stock piles in the materials yard near the work site or if instructed in bins properly constructed to avoid inter mixing of different aggregates. Contamination with foreign materials and with earth during storage and while heaping the materials shall be avoided. The aggregate must be of specified quality not only at the time of receiving at site but more so at the time of loading into mixer.

**Screening and Washing**

a) Sand shall be prepared for use for such screening or washing, or both, as necessary, to remove all objectionable foreign matter while separating the sand grains to the required size fractions.

b) Natural gravel and crushed rock shall be screened and/or washed for the removal of dirt or dust coating, if so, demanded by Engineer.

**Water -** Water used for both mixing and curing shall be free from injurious amounts of deleterious materials. Potable waters are generally satisfactory for mixing and curing concrete.

The suitability of water for making concrete shall be ascertained by the compressive strength and initial setting time test specified in IS-456. The sample of water taken for testing shall be typical of the water proposed to be used for concreting, due account being paid to seasonal variation. The sample shall not receive any treatment before testing other than that envisaged in the regular supply of water proposed for use in concrete. The sample shall be stored in a clean container previously rinsed out with similar water.

**General Requirements of RMC** - The contractor is allowed to use RMC instead of batching plant, but without any extra COST. Ready Mixed Concrete shall conform to IS 4926 and technical specifications as stipulated in CPWD latest edition shall be strictly followed.

**Basis of Supply: -** Ready-mixed concrete shall be supplied having the quality and the quantity in accordance with the requirement agreed with the purchaser or his agent. Not with standing this, the concrete supplied shall generally comply with requirements of IS 456. All concrete will be supplied and invoiced in terms of cubic metres (full or part) of compacted fresh concrete. All proportioning is to be carried out by mass except water and admixture, which may be measured by volume.

**Transport of Concrete**: Ready-mixed concrete shall be transported from the mixer to the point of placing as rapidly as practicable by methods that will maintain the required workability and will prevent segregation, loss of any constituents or ingress of foreign matter or water. The concrete shall be placed as soon as possible after delivery, as close as is practicable to its final position to avoid re-handling or moving the concrete horizontally by vibration. If required by the purchaser the producer can utilize admixtures to slow down the rate of workability loss, however this does not remove the need for the purchaser to place the concrete as rapidly as possible. The purchaser should plan his arrangements so as to enable a full load of concrete to be discharged within 120 minutes of arrival on site. Concrete shall be transported in a truck-mixer unless the purchaser agrees to the use of non-agitating vehicles.

**Batching Plants and Batching Equipment -** Hoppers for weighing cement, mineral admixtures, aggregates and water and chemical admixture (if measured by mass) shall consist of suitable container freely suspended

from a scale or other suitable load-measuring device and equipped with a suitable discharging mechanism. The method of control of the loading mechanism shall be such that, as the quantity required in the weighing hopper is approached the material may be added at controllable rate and shut off precisely within the weighing tolerances specified in CPWD specifications. The weighing hoppers for cement, mineral admixtures aggregate shall be capable of receiving their rated load, without the weighed material coming into contact with the loading mechanism. Where the rated capacity of a batching plant mixing cycle is less than 2.0 m3, additional precautions shall be taken to ensure that the correct number of batches are loaded into the truck mixer. The weighing hoppers shall be constructed so as to discharge efficiently and prevent the buildup of materials. Dust seals shall be provided on cement hoppers between the loading mechanism and the weigh hopper, and shall be fitted so as to prevent the emission of cement dust and not affect weighing accuracy. The hopper shall be vented to permit escape of air without emission of cement dust.

Vibrator or other attachment, where fitted, shall not affect the accuracy of weighing. There shall be sufficient protection to cement and aggregate weigh hoppers and weighing mechanisms to prevent interference with weighing accuracy by weather conditions or external build-up of materials. Where chemical admixture dispensers are used, they shall be capable of measurement within the tolerance and calibrated container orweigh scales shall be provided to check the accuracy of measurement at least once a month.

Each control on the batching console and weigh-dial or display shall be clearly labeled with its function and where concerned with the batching of materials, the materials type. When more than one type or grade of cement is being used, the weighing device and discharge screw or other parts of the transfer system shall beempty before changing from on type of cement to another. When more than one type or grade of cement is being used, the weighing devised and discharge screw or other parts of the transfer system shall be empty before changing from on type of cement to another.

When pulverized fuel ash and other mineral admixtures are batched through the cement weigh system, the weighing device and discharge screw or other parts of the transfer system shall be empty when the weighing system has returned to zero reading or completed the batch.

Where a back weigh system is utilized to weigh materials, a system shall be in place so as to prevent materialsbeing loaded during the process of weighing.

**Mix Design -**

**Classification -** In case of concrete works, mix design may be necessary as per IS:456 and Mix design Code (IS 10262 latest) for certain items as directed by Engineer. All concrete in the works shall be of design mix as defined in IS 456, unless it is a nominal mix concrete such as 1:1.5:3, 1:2:4, 1:3:6, 1:4:8, 1:5:10. Whether reinforced or otherwise, all design mix concrete works to be carried out under this specification shall be divided into the following classifications.

| Class | Specified Characteristic Compressive Strength of 15cm Cube at 28 Days in | Assumed Standard Deviation as per table no.8 of IS 456 | Max. size of aggregate mm |
|---|---|---|---|
| M 40 | 40.0 | 5.0 | 20 |
| M 35 | 35.0 | 5.0 | 20 |
| M 30 | 30.0 | 5.0 | 20 |

| | | | |
|---|---|---|---|
| M 25 | 25.0 | 4.0 | 20 |
| M 20 | 20.0 | 4.0 | 20 |
| M 15 | 15.0 | 3.5 | 20 |

It shall be very clearly understood that whenever the class of concrete such as M 20 is specified it shall be the Contractor's responsibility to ensure that minimum crushing strength stipulated for the respective class of concrete is obtained at works. The maximum total quantity of aggregate by weight per 50 kg of cement shall not exceed 250 kg except when otherwise specifically permitted by Engineer.

To fix the grading of aggregates, water cement ratio, workability and the quantity of cement required to give preliminary and works cubes of the minimum strength specified, the proportions of the mix shall be determined by weight. Adjustment of aggregate proportions due to moisture present in the aggregate shall be made. Mix proportioning shall be carried out according to Indian Standard Specifications.

Whenever there is a change either in required strength of concrete or water cement ratio or workability or the source of aggregates and or cement, preliminary tests shall be repeated to determine the revised proportions, of the mix to suit the altered conditions.

While fixing the value for water cement ratio for preliminary mixes, assistance may be derived from the graph (appendix IS 456) showing the relationship between the 28-day compressive strengths of concrete mixes with different water cement ratios and the 7 days compressive strength of cement tested in accordance with IS 269.

**Preliminary tests** - Test specimens shall be prepared with at least two different water/cement ratios for each class of concrete, consistent with workability required for the nature of the work. The materials and proportions used in making preliminary tests shall be similar in all respects to those to be actually employed in the works as the object of these tests is to determine the proportions of cement, aggregates and water necessary to produce concrete of required consistency and to give the specified strength. It will be the Contractor's sole responsibility to carry out these tests and he shall therefore furnish to Engineer a statement of proportions proposed to be used for the various concrete mixes.

Materials shall be brought to the room temperature and all materials shall be in a dry condition. The quantities of water, cement and aggregates for each mix shall be determined by weight/volume to an accuracy of 1 part in 1000 parts.

Mixing shall be done by a batching plant in such a manner as to avoid loss of water. The cement and fine aggregate shall first be mixed dry until the mixture is uniform in colour. The coarse aggregate shall then be added, mixed and water added and mixed thoroughly for a period of not less than 3 minutes until the resulting concrete is uniform in appearance. Each mix of concrete shall be of such a quantity as to leave about 10% excess concrete after moulding the desired number of test specimens.

The consistency of each mix of concrete shall be measured immediately after mixing, by the slump test in accordance with IS 1199. If in the slump test, care is taken to ensure that no water or other materials is lost, the materials used for the slump test may be remixed with the reminder of the concrete for making the specimen test cubes. The period of remixing shall be as short as possible yet sufficient to produce a homogeneous mass.

**Compression tests** of concrete cubes shall be made as per IS 516 on 15 cm cubes. Each mould shall be provided with a metal base having a plane surface so as to support the mould during filling without leakage. The base plate shall be preferably attached to the mould by springs or screws. The parts of the mould when assembled shall be positively and rigidly held together. Before placing concrete, the mould and base plate shall be cleaned and oiled. The dimensions and internal faces of the mould shall be accurate within the following limits:

Height and distance between the opposite faces of the mould shall be of specified size plus or minus 0.2 mm. The angle between the adjacent internal faces and between internal faces and top and bottom planes of mould shall be 90 Deg. plus or minus 5 Deg. The interior faces of the mould shall be plane surfaces with a permissible variation 0.03 mm.

Concrete test cubes shall be moulded by placing fresh concrete in the mould and compacted as specified in IS 516.

Curing shall be as specified in IS 516. The cubes shall be kept in moist air of at least 90% relative humidity at a temp. Of 27 Deg. Cent. Plus, or minus 2 Deg. Cent. For 24 hours plus or minus half hour from the time of adding water to the dry ingredients. Thereafter they shall be removed from the mould and kept immersed in clean, fresh water and kept at 27 Deg. Cent. Plus, or minus 2 Deg. Cent. Temp. Until required for test. Curing water shall be renewed every seven days. A record of maximum and minimum temperatures at the place of storage of the cubes shall be maintained during the period they remain in storage.

**Testing of specimens**

The strength shall be determined based on not less than five cubes test specimens for each age and each water cement ratio. All these laboratory test results shall be tabulated and furnished to Engineer. The test result shall be accepted by Engineer if the average compressive strengths of the specimens are tested subject to the condition that only one out of the five consecutive tests may give a value less than the specified strength forthat age. The Engineer may direct the Contractor to repeat the tests if the results are not satisfactory and also to make such changes as he considers necessary to meet the requirements specified. All these preliminary tests shall be conducted by the Contractor at his own cost in an approved laboratory.

**Proportioning, consistency, batching and mixing of concrete**

**Aggregate -**The proportions which shall be decided by conducting preliminary test shall be by volume. These proportions of cement, fine and coarse aggregates shall be maintained during subsequent concrete mixing. The supply of properly graded aggregate of uniform quality shall be maintained over the period of work, the grading of aggregates shall be controlled by obtaining the coarse aggregate in different sizes and blending them in the right proportions. The different sizes shall be stocked in separate stock piles. The grading of coarse and fine aggregate shall be checked as frequently as possible as determined by Engineer, to ensure maintaining of grading in accordance with the samples used in preliminary mix design. The material shall be stock piled well in advance of use.

**Cement -** The cement shall be measured by weight.

**Water -** Only such quantity of water shall be added to the cement and aggregates in the concrete mix as to ensure dense concrete, specified surface finish, and satisfactory workability, consistent with the strength stipulated for each class of concrete as per approved nominal mix ratio. The water added to the mix shall be such as not to cause segregation of material or the collection of excessive free water on the surface of the concrete.

The W/C ratio specified for use by Engineer shall be maintained. The Contractor shall determine the water content of the aggregates as frequently as directed by Engineer as the work progress and as specified in IS 2386 (Part-III) and the amount of water added at the mixer shall be adjusted as directed by Engineer so as to maintain the specified W/C

ratio. To allow for the variation in volume of aggregates due to variation in their moisture content suitable adjustments in the volume of aggregates shall also be made.

**Slumps for Various Types of Construction**

| Placing Conditions | Degree of Workability | Slump (mm) |
|---|---|---|
| Blinding concrete: Shallow sections; Pavements using pavers Mass concrete: | Very low | 25-75 |
| Lightly reinforced sections in slabs, beams, walls, columns: Floors; Hand placed pavements; | Medium | 50-100<br>75-100 |
| Canal lining; Strip footings Heavily reinforced sections in slabs, beams, walls, columns; Slip form work; Pumped concrete Trench fill; *In-situ pilling Tremie concrete* | High | 100-150 |
| | Very high | 150-180 |

**Curing, protecting, repairing and finishing**

**Curing -** All concrete shall be cured by keeping it continuously damp for the period of time required for complete hydration and hardening to take place. Preference shall be given to the use of continuous sprays or ponded water continuously saturated covering of sacks, canvas, hessian, polythene sheets or other absorbent materials, or approved effective curing compounds applied with spraying equipment capable of producing a smooth, even textured coat. Extra precautions shall be exercised in curing concrete during cold and hot water as outlined hereinafter. The quality of curing water shall be the same as that used for mixing concrete.

Certain types of finish or preparation for overlaying concrete must be done at certain stage of the curing process and special treatment may be required for specific concrete surface finish.

Curing of concrete made of high alumina cement and super sulphated cement shall be carried out as directed by Engineer.

Fresh concrete shall be kept continuously wet for a minimum period of 15 days from the date of placing of concrete following a lapse of 12 to 14 hours after laying of concrete. The curing of horizontal surfaces exposed to the drying winds shall however begin immediately

the concrete has hardened. Water shall be applied uniformly to concrete surfaces within 1 hour after concrete has set. Water shall be applied to formed surfaces immediately upon removal of forms. Quantity of water applied shall be controlled so as to prevent erosion of freshly placed concrete.

Curing shall be assured by use of an ample water supply under pressure in pipes with all necessary appliance of hose, sprinklers and spraying devices. Continuous fine mist spraying or sprinkling shall be used, unless otherwise specified or approved by Engineer.

Whenever, by the judgment of Engineer, it may be necessary to omit the continuous spray method, a covering of clean sand or other approved means such as wet gunny bags which will prevent loss of moisture from the concrete, may be used. No type of covering will be approved which would stain or damage the concrete during or after the curing period. Covering shall be kept continuously wet during the curing period.

For curing of concrete in pavements, side-walks floors, flat roofs or other level surfaces, the ponding method of curing is preferred. The method of containing the ponded water shall be approved by Engineer. Special attention shall be given to edges and corners of the slabs to ensure proper protection to this area. The ponded area shall be kept continuously filled with water during the curing period. Surface coating type compounds shall be used only by special permission of Engineer, curing compounds shall be liquid type white pigmented. Other curing compounds shall be used on surfaces where future blending with concrete, water or acid proof membrane or painting is specified.

All equipment and materials required for curing shall be on hand and ready for use before concrete is placed.

- **FORM WORK**

**General**- The formwork shall consist of shores, bracings, sides of beams and columns, bottom of slabs, etc., including ties anchors, hangers insert, etc., complete which shall be properly designed and planned for the work. False work shall be so constructed that necessary adjustment can be made to compensate for take up and settlements. Wedge may be used at the top or bottom of timber shores but not at both ends to facilitate vertical adjustment or dismantling of the formwork.

**Type of formwork** - Formwork may be of timber, plywood, metal, plastic or concrete. For special finishes the formwork may be lined with plywood, steel, sheets, tempered hard board, etc. Sliding forms and slip forms may be used with the approval of Engineer.

**Form work requirements** - Forms shall conform to the shapes, lines, grades and dimensions including camber of the concrete as called for on the drawings. Ample studs, braces, ties, straps, etc., shall be used to hold the forms in proper position without any distortion whatsoever until the concrete is set sufficiently to permit removal of forms. Forms shall be strong enough to permit the use of immersion vibrators. In special cases form vibrators may also be used. The shuttering shall be close boarded. Timber shall be well seasoned, free from sap, shakes, loose knots, worm holes, warps or other surface defects in contact with concrete. Faces coming in contact with the concrete shall be free from adhering grout, plaster, paint, projecting nails, splits or other defects. Joints shall be sufficiently tight splits or other defects. Joints shall be sufficiently tight to prevent loss of water or any fine material from concrete.

Plywood shall be used for exposed concrete surfaces; where called for. Sawn and wrought timber may be used for unexposed surfaces. Inside faces of forms for concrete surfaces which are to be rubbed finished shall be planned to remove irregularities or unevenness in the face. Formwork with linings shall be permitted.

All new and used form timber shall be maintained in a good condition with respect to shape, strength, rigidity, water tightness, smoothness and cleanliness of surfaces. Form timber unsatisfactory in any respect shall not be used and if rejected by Engineer shall be removed from the site.

Formwork, during any stage of construction showing signs of distortion or distorted to such a degree that the intended concrete work will not conform to the exact contours indicated on the drawings, shall be repositioned and strengthened. Poured concrete affected by the faulty formwork, shall be removed completely and the formwork be corrected prior to placing of new concrete.

Excessive construction camber to compensate for shrinkage, settlement may impair the structural strength of members and shall not be permitted.

Forms shall be so designed that their removal will not damage the concrete. Face formwork shall provide true vertical and horizontal joints, conform to the architectural features of the structure as to location of joints and be as directed by engineer.

Where exposed smooth or rendered concrete finishes are required the forms shall be constructed with special care so that the resulting concrete surfaces require a minimum finish

- **REINFORCEMENT STEEL**

**General** - Reinforcement bars, supplies are arranged by contractor unless otherwise specified, as shown and specified on the drawings. Wire mesh or fabric shall be in accordance with IS 1566. Substitution of reinforcement will not be permitted except upon written approval from Engineer.

All reinforcement shall be clean, free from grease, oil, paint, loose mill scale, loose rust, dust, bituminous material or any other substances that will destroy or reduce the bond. All rods shall be thoroughly cleaned before being fabricated. Pitted and defective rods shall not be used.

**Providing, fabricating and placing in position reinforcement steel -** The quality of the steel shall be as mentioned in the materials section. The bars shall be fabricated as per the drawings and binding with 0.9 to 1.5mm GI binding wire etc. Laps and splices for reinforcement shall be as shown on the drawings. Splices in adjacent bars shall be approved by Engineer. The bars shall not be lapped unless the length required exceeds the maximum available lengths of bars at site. Laps, chair, splices shall not be measured and paid separately.

**Cover** - Unless indicated otherwise on the drawings, clear concrete cover for reinforcement (exclusive of plaster or other decorative finish) shall be as follows:

a) At each end of reinforcing bar, not less than 25 mm nor less than twice the diameter of the bar whichever is less.

b) For a longitudinal reinforcing bar in a column, not less than 40 mm, nor less than the diameter of the bar. In case of columns of minimum dimensions of 20 cm or under, with reinforcing bars of 12 mm and less in diameter, a cover of 25 mm may be used.

c) For tensile, compressive, shear, or other reinforcement in a slab or wall not less than 12 mm nor less than the diameter of such reinforcement.

d) For any other reinforcement not less than 12 mm nor less than the diameter of such reinforcement.

e) For footings and other principal structural members in which the concrete is deposited directly against the ground, cover to the bottom reinforcement shall be 75 mm. If concrete is poured on a layer of lean concrete the bottom cover may be reduced to 50 mm.

f) For concrete surfaces exposed to the weather or the ground after removal of forms, such

as retaining walls, footing sides and top, etc., not less than 50 mm for bars larger than 16 mm dia and not less than 40 mm for bars 16 mm dia or smaller.

g) Increased cover thickness shall be provided, as indicated on the drawings, for surfaces exposed to the action of harmful chemicals (or exposed to earth contaminated by such chemical, acid, alkali, saline atmosphere, sulphureous smoke, etc.

h) For reinforced concrete members, totally or periodically immersed in sea water or subject to sea water spray, the cover of concrete shall be 50 mm more than those specified in (a) to (e) above.

i) For liquid retaining structures the minimum cover to all steel shall be 40 mm or the diameter of the main bars, whichever is greater. In the presence of sea water and soils and waters of a corrosive character the cover shall be increased by 10 mm.

j) Protection to reinforcement in case of concrete exposed to harmful surroundings may also be given by providing a dense impermeable concrete with approved protective coatings, as specified by the Engineer.

k) The correct cover shall be maintained by cement mortar cover blocks. Reinforcement for footings, beams and slabs on sub-grade shall be supported on precast concrete blocks as approved by Engineer. The use of pebbles or stones shall not be permitted.

**Inspection -**Erected and secured reinforcement shall be inspected, jointly measured and recorded and approved by Engineer prior to placement of concrete.

- **ROOFING WORKS**

**General –**This specification is in respect of Supply, Fabrication and supervision of Pre-Engineered Super structure and cladding for setting up of POWER WINCH & PRESERVATION BAY OF HCSL, NAZIRGAUNJ UNIT, HOWRAH.

The scope of work in the contract consists of material, supply, fabrication, erection, transportation, labor and supervision of above works complete in all respects as specified here in, and as shown in the drawings enclosed.

The Contractor shall set out and level the works and will be responsible for the accuracy of the same. He is to provide all instruments and proper qualified staff with labors for getting his work checked by the Client/Consultant.

The Contractor shall take adequate precautions to ensure complete safety and prevention of accidents at site. The safety precautions shall conform to the relevant IS codes, laws and local regulations.

The contractor shall protect surveyor's Bench Marks and reference lines, ground water, gauges and control points from damage or movement during work. In case of any damage, the contractor shall have to restore to original condition at his own cost.

**Standards -** The design and installation shall fully comply with the requirements of the statutory regulations that are in force in the place of installation. The work shall be carried out in accordance with the latest editions of relevant Indian Design Codes particularly the following.

1) I.S. - 800-2007 - General Construction in steel- Code of Practice.

2) I.S. - 875-1987 - Code of Practice for design loads for buildings &structural Part -1 Dead Loads.
3) I.S. - 875-1987 - Code of Practice for design loads for buildings &structural Part -2 Imposed Loads.
4) I.S. - 875-1987 - Code of Practice for design loads for buildings &structural Part -3 Wind Loads.
5) I.S. – 1893-Part1 Criteria for earth quake resistant design of structures.
6) I.S. – 1893 - Part 4 Criteria for earthquake resistant design of structures- Industrial structures Including stack-like structure.

- Shed will be manufactured in accordance with the following codes.

i.e. I.S. – 800 – 2007 - General Construction in steel - Code of Practice.

*Unless specified all work shall conform to the latest Indian Standards.*

**Site Conditions –**

- Mean annual rainfall - } 124.5 mm. average per day as per latest
- Meteorological data - } Maximum rainfall
    - Basic wind speed – 50m/s (as per I.S. 875 – Part 3)
    - Seismic zone – III (as per I.S. – 1893)
    - Maximum ambient temperature – $45^0$ C.

**Scope of work –** The scope of work includes the pre-engineered superstructure and cladding works for setting up of POWER WINCH & PRESERVATION BAY OF HCSL, NAZIRGAUNJ UNIT, HOWRAH.

General drawing of the POWER WINCH & PRESERVATION BAY showing the overall dimension is attached with the tender as detailed below.

The scope of work of the tender shall include but not limited to the following:

1) Bolt lists for the structure concerned on the basis of drawings.

2) Supply structural steel for PEB, and all other materials including foundation bolts for the structure.

3) Fabrication of structural steel work for PEB, and delivery of the fabricated steel work to the site including providing one shop coat primer.

4) Receiving at site, off-loading, stacking, transporting to the site for erection and erecting the structural steelwork, including aligning, levelling and making ready in all respects for grouting. Corrosion resistant painting shall be applied considering the marine environment. No painting shall be done in frosty/foggy weather or when the humidity is high enough to cause condensation on the surface to be painted.

5) Supply and fixing all roof and side sheeting including hook bolts, sheeting bolts, all necessary washers, flashing, ridging, glazing and all other materials necessary to complete the work according to the drawing.

**Design** – The design of the system shall be carried out to comply the following:

1) The design should strictly adhere to architectural profiles and features indicated in the tender drawing.
2) The rain water disposal arrangement for roofing and cladding shall be provided.
3) The Contractor shall ensure the availability of all sections proposed by client or consultant before submitting his offer. If any such sections become unavailable subsequently, he shall inform to the Client or Consultant
4) Sweep blasting shall be carried out for all members (primary, secondary membered.)
5) Primer coat shall be suitable for transport, handling, and corrosion resistance during storage etc.
6) As far as possible, the vertical bracings shall not cross over or hinder the openings.

**Materials –**

- **Structural Steel:** Column, beam, rafter and other built-up sections shall be made from

hot rolled plates conforming to I.S. - 2062-2006 steel. The plates shall be joined together on one side of the web by a continuous automatic submerged arc welding process to produce the section required. Bracing Rod shall conform to the physical specification of I.S. - 2062 and have minimum yield strength of 345 MPa. All hot rolled sections shall conform to the physical specifications of I.S. - 2062 having minimum yield strength of 250MPa. Cold formed sections shall confirm to the physical specifications of I.S. - 2062. Primary structural connections are made with hot dipped galvanized, high strength bolts conforming to ASTM A-325, type 1 (or equivalent grade). Purlins and girts are connected to their supporting members by machine bolts conforming to ASTM A- 307, electro-galvanized with a Chromate color conversion coating (or equivalent) Anchor bolts shall confirm to ASTM A -307 with minimum strength of 400 MPa the steel column strut of PEB and RCC interface shall be designed as a hinged base with a minimum of 20 mm Ø (dia.) anchor bolt according to the design calculation.

- **Primary members:** Primary structural framing shall include the transverse rigid frames, lean-to- rafters and columns, canopy rafters, interior columns (beam and column frames), bearing frame rafters and corner columns and end wall wind columns.

- **Secondary members:** Secondary structural framing shall include the purlins, girts eave struts, wind bracing, flange bracing, base angles, clips and other miscellaneous structural parts.

- **Paint of Structural members:** All structural members shall be cleaned by wire brushing to remove dirt, grease, oil and loose mill scale and given one shop coat of red oxide, air drying, phenol modified alkyd resin primer.

- **Connection:**

1) All field connections shall be bolted (unless otherwise noted).

2) Primary structural connections are made with hot dipped galvanized, high strength bolts conforming to ASTM A-325, type 1 (or equivalent grade).

3) Purlins and girts are connected to their supporting members by machine bolts conforming to ASTM A-307, electro-galvanized with a Chromate color conversion coating (or equivalent).

4) Anchor bolts shall confirm to ASTM A -307 with minimum strength of 400MPa.

5) The steel column strut of PEB and RCC interface shall be designed as a hinged base with a minimum of 20mm Ø (dia.) anchor bolt according to the design calculation.

- **Pre-coated galvanized profile sheets:**

1. **Roofing** - 0.50mm TCT 300MPa 150GSM colour coated galvalume sheets of approved colour in Profile (34.5mm crest height in 333.3mm pitch) on the top and 0.50mm. TCT 300MPa 150GSM colour coated galvalume slightly ribbed sheets at the bottom with Polyurethane.

   Foam insulation as infill. The infill insulation material (PUF) shall be fire retardant self-extinguishing CFC/HCFC Free and Zero ODP (Ozone Depletion Potential). Polyurethane Foam shall have a density of 40 + 2Kg/M3 in 30mm thick injected in between the top & bottom sheet using a special foaming machine. The panels will be supplied in 1023mm supply width (1mtr effective width) and length can be up to a maximum of 6mtr. The panel shall be manufactured from a continuous panel manufacturing line using pentane as blowing agent.

2. **Cladding -** 0.50mm TCT cold rolled steel of 550MPa yield strength with hot dip metallic coating of minimum 150 gm/sq.m. Zinc Aluminum alloy coating mass (55% Aluminum, 43.5% Zinc and 1.5% Silicon) total of both sides. The colour coating shall have a total coating thickness of 35- micron Silicon Modified Polyester paint system of approved colour comprising of 20 microns of exterior coat on top surface and 5 microns reverse coat on back surface over 5-micron primer coat on both surfaces. These sheets will be in hi-rib profile with 28mm crest height in 195mm pitch with 975mm covered width and length can be up to a maximum of 6mtr. These sheets will be fixed to the girts using self- drilling and self-tapping fasteners with EPDM washers for perfect sealing.

- **Bolts and Nuts:** All bolts and nuts shall conform to IS: 1363 and IS: 1364 and unless specified otherwise shall be hexagonal. All nuts shall fit tight. The Contractor shall submit test certificates when called for. High strength friction grip bolts (HSFG bolts) and nuts shall conform to I.S. - 3757 and I.S. – 6623 respectively.

- **Washers:** Plain washers shall be made of mild steel, unless otherwise specified. One washer shall be supplied with each bolt and in case of special types of bolts more than

one washer as needed for the purpose shall be supplied. An additional spring washer shall be provided for bolts carrying dynamic or fluctuating loads and those indirect tension. Washers shall conform to the relevant I.S. codes. High tensile friction grip washers shall confirm to I.S. – 6649.

- **Electrodes:** Mild steel electrodes shall conform to IS: 814 and high tensile steel electrodes, if required, to IS: 1442. The Contractor shall furnish to the Client/Consultant a certificate issued by the manufacturer to the effect that the electrodes supplied are in accordance with the above specifications. All electrodes used shall be BIS marked. For welding in any particular position, the electrodes used shall be those recommended by the manufacturer for use in that position.

**Other Requirements:**

1) **Gutters and Downspouts -** All elements of the roof drainage system viz., size and slope of gutters, diameter and spacing of downspouts etc., shall be adequately designed to prevent water overflow over the sheds. The intensity of the rainfall shall be as per the data available with the meteorological department. It is to be noted that the integrity of a roof drainage system is influenced by the design of its gutters and downspouts and by the proper spacing of the downspouts. Gutter shall be glass reinforced polyester translucent fiber sheet 300mm wide in half round "channel shaped" of fixed with 50 X 6mm MS Clamp with necessary bolts and nuts, screws and jointing material as mentioned above, and should be designed to carry water from the roof of the shed to the downspouts. Gutters may be either Eave gutters or Valley gutters. Eave gutters may be uniquely shaped to create a distinctive look along the Eave of the building as per architectural elevations.

2) **Flashing, Ridge Capping, Trim and Closures -** Flashing, ridge capping and trim has to be provided at the rake, corners, eaves, framed openings, ridges and wherever necessary to provide weathertightness and finished appearance. Sheets for flashing, metal closure, trim and other miscellaneous uses shall be of minimum 0.5 mm TCT Colour-coated, galvanized sheet of 550MPa 150GSM fabricated to size as per the site requirement.

   All openings are to be provided as per the requirement detailed in the specification and schedule of quantities.

3) **Aesthetics -** Final selection of colours and approval of the appearance of the system

shall not be made by the Contractor until the submission and approval of samples. A uniform appearance shall be achieved without distortion of reflections on the glazed external facade. The finish shall be uniform throughout, both in terms of colour and level of gloss.

All finishes shall be stable and not prone to flaking, blistering, colour fading or other potential defects associated with the finish. Any colour fade or change in level of gloss during the design life shall be uniform across the surface of the panel and shall not visibly vary between different elements of the shed envelope.

4) **Anchorage and Fixing Support -** Anchorage and supports shall be fabricated and installed to comply with all performance criteria specified for the system. The type and location of all fixings shall be subject to approval by the Client/Consultant.

5) **Sealants -** Sealants should be applied as per requirement at side laps and end laps of roof panels and around self-flashing windows. Sealant shall be 6 mm wide x 5mm thick, asbestos fiber filled pressure sensitive Butyl tapes. The sealant shall be non-asphaltic, no shrinking, non- drying and non-toxic and shall have superior adhesion to metals, plastics and painted surfaces at temperatures from $51^0$ Celsius to + $104^0$ Celsius. The offer shall contain details of sealants to be used.

6) **Painting -** All fabricated steel structures for primary members (Columns and Rafters) to be cleaned by Sweep Blasting and Painted with necessary corrosion resistant coating as per Manufactures recommendation. Methodology of painting shall be got approved by the Engineer prior to the commencement of work. All secondary Members including purlins girts and all necessary members should be Galvanized sections.

Surface contamination in the form of rust, scale, oil grease and dirt must be removed before painting. Invisible contamination may also be present and represents, on the whole, a greater hazard. Examples of the latter are soldering fluxes, perspiration in the form of hand marks, chlorides from marine atmosphere and sulfite from industrial atmosphere.

The purpose of painting/coating application is to develop a continuous highly adherent film with an even thickness over the substrate. To achieve this, various factors have to be considered such as type of coatings and weather conditions, application methods etc.

**APPLICATION RESTRICTIONS**

For all cases, paint manufacturer guidelines shall be followed. Following restrictions are given as recommended practices:

Coating application shall not be permitted during fog, mist or rain.

a. Coating application shall not be permitted when the relative humidity is 85 percent or above.

b. Coating application shall not be permitted when the steel surface temperature and/or ambient temperature is below 10°C (50°F).

c. The shop primer coat shall be applied with an average dry film thickness of 100 microns.

d. Coatings shall not be applied before the surface has been inspected and the preparatory work approved.

e. All paint materials shall be accompanied by Manufacturer Test Certificate. All zinc-based paints shall have minimum 85% of metallic Zinc by weight of total solids on dry film. After the erection/assembly of fabricated structures at the plant site, damaged and defective shop coats shall be touched up with the same type of paint as used for shop coat.

7) **Testing** – In addition to the special provisions made here after as to the sampling and testing of materials by particular methods, samples of materials and workmanship proposed to be employed in the execution of the work may be called for at any time by the Client/Consultant and when so called for by the Client/Consultant, the same shall be furnished by the Contractor free of cost without delay. The samples when approved shall be kept by the Client who shall reject all materials or workmanship not in conformity with the quality and character of the approved samples.

8) **Fabrication** – All fabrication of structural steel work shall be as per the approved drawings and as per codes mentioned above. The fabrication shall be carried out in a state-of-the-art manufacturing facility for pre-fabricated structures.

9) **Type of Construction** – The steel structures shall generally be of shop welded construction. Pre- engineered building system shall be adopted. The type of

connections as applicable shall be shown in design drawings

10) **Storing materials** – All materials shall be stored properly on skids, above the ground. It shall be kept clean and properly drained. Structural steel members shall be so stored and handled that member are not subjected to excessive stresses and damage.

11) **Workmanship** – All workmanship shall be equal to the best practice in modern structural Greatest accuracy shall be observed in the manufacture of every part of the work and all similar parts shall be strictly interchangeable. All materials shall be straight and if necessary, before work shall be straightened and/or flattened by pressure unless required to be of curvilinear form and shall be free from twists. The erection clearance for cleated ends of members connecting steel to steel should not be greater than 2mm at each end. The erection clearance at ends of beams without web cleats should not be more than 3mm at each end, but where for practical reasons a greater clearance is necessary, suitably designed seating or connections shall be provided. Chipping of angles, flanges and edges of plates wherever necessary shall be done without damaging the parent metal. Chipped edges shall be ground to a neat finish and sharp corner sand hammered rough faces shall be rounded off. The edges and ends of all flange plates and web plates of plate girders and built-up columns, of plates forming chords or web members of girders, and all cover plates, the ends of all angles, tees, channels and other sections forming the flanges of plate girders and columns, and chords and web members of girders shall be planed. Edge preparation for welding maybe done by machine-controlled flame cutting with edges free of burrs, clean and straight. The top ends of all intermediate stiffeners shall be planed or ground to fit tightly to the main angles or flanges. Care shall be taken to ensure a full bearing of the stiffeners at the supports and at other points where concentrated load is applied. The ends shall not be drawn or caulked. The butting surfaces at all joints of girders or columns shall be planed so as to butt in close contract throughout the finished joint.

Holes for bolts shall be drilled conforming to relevant standards. All holes, except as stated hereunder, shall be drilled to the required size or sub-punched 3mm less in diameter and reamed thereafter to the required size. Thickness of the material for sub- punching shall not be greater than 16mm. All matching holes for bolts shall register with each other so that a gauge of 0.8mm less in diameter than the hole can pass freely through the members assembled for bolting in the direction at right angle

to such members. All holes for turned and fitted bolts shall be drilled undersize of 1mm and after assembly, reamed to a tolerance of +0.13mm to 0mm unless otherwise specified. The parts shall be firmly bolted together during such block drilling and taken apart for removal of burrs after drilling.

Holes in purlins, side sheeting runners, packing plates and lacing bars may be punched full size, provided the thickness of the materials does not exceed 13mm. All punching and sub-punching shall be clean and accurate and all drilling shall be free from burrs. No holes shall be made by gas cutting process.

Stiffeners shall bear tightly at both top and bottom without being drawn. The component part shall be so assembled that they are neither twisted nor otherwise damaged. Specified chamfers, if any, shall be provided. Trial assemblies shall be carried out after fabrication to ensure accuracy of workman ship and those checks shall be witnessed by the Client/Consultant.

All turned and fitted bolts shall be carefully turned and shall be parallel throughout the barrel. The following limits of tolerance shall be permitted upon the diameter of the barrels of turned bolts and holes which they are to fit. Barrel of bolt hole Limit of tolerance High 0.00mm. to (+)0.13mm. Low (-)0.13mm. to 0.00mm.

Each bolt and nut shall be assembled with washers of appropriate shape, quality and number in cases where plane parallel surfaces are involved. Washer shall be placed under the bolt head or the nut, whichever is to be rotated during the tightening operation. The rotated nut or bolt head shall be tightened against a surface normal to the bolt axis, and the appropriate tapered washer shall be used when the surfaces are not parallel. The nut shall be placed so that the identification mark is clearly visible after tightening. Nuts and bolts shall be always be tightened in a staggered pattern and, where there are more than four in any joint, they shall be tightened from the centre of the joint out wards.

At the time of assembly, the surface in contact shall be free of paint or any other applied finish, oil, dirt, loose rust, loose scales, burrs and other defects which would prevent solid seating of the parts or would interfere with the development of fabrication between them. It shall be the responsibility of the Contractor to work with in the slip factor specified for the particular case. If after final tightening a nut or bolt is slackened off for any reason, the bolt, nut and washer or washers shall be discarded and not used again. All the high-tension bolts if used in construction are to

be clearly marked on drawings with the appropriate torque tension required for fixing.

12) **Welding** – The welding and welded work shall generally be in accordance with: "American Welding Society" (AWS) D1.1. 96 Structural welding code Steel Manual, D1.1 – 2004. All welders should be qualified for the type of welds performed.

All electrodes shall be kept under dry conditions. Any electrode damaged by moisture shall not be used unless it is guaranteed by the manufacturer that when it is properly dried, there will be no detrimental effect. Any electrode which has part of its flux coating broken away or is otherwise damaged, shall be rejected. Any electrode older than six (6) months from the date of manufacture shall not be used.

The edges shall be prepared with an automatically controlled flame cutting torch correctly to the shape, size and dimensions of the groove, prescribed in the design and shop drawings. The welding surfaces shall be smooth, uniform and free from fins, tears, notches or any other defect which may adversely affect welding and shall be free of loose scale, slag, rust, grease, paint, moisture or any other foreign matter. The welding procedure shall be arranged by the Contractor to suit the details of the joints as indicated in the drawings and the position at which welding has to be carried out.

The welding procedure shall be so arranged that the distortion and shrinkage stresses are reduced to a minimum and that the welds meet the requirement of quality specified here under. Any weld found defective shall be cut by using either chipping hammer or gouging torch in such a manner that adjacent material is not injured in any way. The Contractor shall satisfy the Client / Consultant that the welders are suitable for the work for which they will be employed and shall produce evidence to the effect that welders have satisfactorily completed appropriate tests. The Client/Consultant may at their own discretion order periodic tests of the welders and/or of the welds produced by them. Such tests shall be at the expense of the Contractor.

13) **Shop Assembly** – The steel work shall be temporarily shop assembled as necessary so that accuracy of fit may be checked before dispatch. The parts shall be shop assembled with a sufficient number of parallel drifts to bring and keep the parts in place.

14) **Erection making** – Each fabricated member whether assembled prior to dispatch or not so assembled, shall bear an erection mark, which will help to identify the member and its position in respect of the whole structure, to facilitate re-erection at

site. These erection marks shall be suitably incorporated in the shop detail and erection drawings.

15) **Quality Control –** To ensure good quality of workmanship the Contractor shall control the fabrication and assembly of structures as per the procedure outlined below.

The Contractor shall routine check execution of established technological processes or general technological instructions. All welds shall be visually examined and measured for external dimensions by appropriate gauges.

The Contractor shall conduct tests in accordance with the following norms:

I. **Visual examination**- Hundred percent (100%) of the welded joints.
II. **Dye-penetration Test.**
III. **Mechanical Test.**

I. **Visual examination**: The Contractor shall conduct visual examination and measurement of the external dimensions of the weld for all joints. Before examining the welded joints, areas close to it on both side ofweld for a width not less than 20mm shall be cleaned of slag and other impurities. Examination shall be done by a magnifying glass which has a magnification power of ten (10) and measuring instrument which has an accuracy of +0.1mm or by weld gauges. The Contractor shall examine the following during the visual checks.

01. Correctness and shape of the welded joints.
02. Incomplete penetration of weld metal
03. Influx.
04. Burns
05. Unwelded craters.
06. Under cuts.
07. Cracks in welded spots and heat affected zones.
08. Porosity in welds and spot welds.
09. Compression in welded joints as a result of electrode impact while carrying out contract welding.
10. Displacement of welded element.

The contractor shall document all data as per sound laboratory practices.

II. **Dye-penetration test:** The basic stages shall comprise surface preparation,

application of penetrant, excess penetrant removal, developer application and inspection. The entire surface shall be subjected to Dye- penetration test as per I.S. – 3658 and the minimum acceptance standards shall be as outlined therein.

III. **Mechanical test:** The Contractor shall carry out various mechanical tests to determine weldability, nature ofbreak, correct size and type of electrodes, degree of preheat and post-heat treatment etc. The type, scope and sample of various mechanical tests shall be determined in agreement with the Client / Consultant. The number of tests conducted shall depend on the results obtained to satisfy the Client that the correct type and size of electrode, degree of pre-heating and post-heating and weld ability of different metal are being followed.

16) **Inspection and Testing** – The Client/Consultant shall have free access at all areas on able times to the Contractor's works where the fabrication of steelwork is carried out and shall be afforded all reasonable facilities by the Contractor for satisfying himself that the fabrication is being under taken in accordance with the provisions of the drawings and specifications.

The Contractor shall continuously inform the Client/ Consultant of the progress in fabrication and as to when items will be ready for inspection. The Contractor shall give a minimum of fourteen (14) working days' notice to the Client /Consultant for inspection of the items. Unless directed otherwise, inspection shall be made at the place of manufacture prior to dispatch. Should any structure be found not to comply with any of the provisions of this specification, it shall be liable for rejection. No structure or part of the structure, once rejected shall be re-submitted for inspection / test, except in cases where the Client / Consultant considers the defect as rectifiable.

Defects which may appear during fabrication shall be made good with the consent of and according to the procedure laid down by the Client / Consultant. All gauges and templates necessary to satisfy the Client/Consultants shall be supplied by the Contractor. The Client / Consultant may, at his discretion, check the test results obtained at the contractor's work by independent tests at the government.

17) **Marking, Packing and Dispatching** – Each piece shall be distinctly marked before delivery, in accordance with the approved marking diagram and shall bear such other marks as will facilitate erection. For easy identification at site a small distinguishing mark for each building shall be painted on each end of every member dispatched from fabrication shop. The fabricated steel work shall be dispatched by the Contractor in

such portions as may be found convenient for erection or as ordered by the Client/Consultant to meet the time schedule.

All projecting plates or bars and all ends of members at joints shall be stiffened, all straight bars and plates shall be bundled, all screwed ends and machined surfaces shall be suitably packed andall bolts, nuts, washers and small loose parts shall be packed separately inbox as to prevent damage or distortion during transit.

**18) Storing and Handling of materials-**The fabricated materials on receipt at site shall be carefully unloaded, examined for defects, checked, stored out for each building and stacked securely on skids above level ground. The ground shall be kept clean and properly drained. Girders and beams shall be placed upright and stored. Long members, such as columns and chords, shall be supported on skids, placed near enough to prevent damage from deflection.

The fabricated material shall be verified with respect to markings on the marking plan or shipping lists supplied by the fabricator. Any material found damaged or defective shall be stacked separately and the damaged or defective portions shall be identified by painting in distinct colour. Such materials shall be dealt with as instructed by the Client/Consultant.

The handling and storing of the component parts of a structure shall involve the use of method and appliance not likely to produce damage by twisting, bending or otherwise deforming the metal. No member slightly bent or twisted shall be put in place until the defects are corrected and members seriously damaged in handling shall be rejected.

All small bends or twists received by members shall be rectified before such members are put in place, any serious bends or damage shall be reported at once to the Client/Consultant by the Contractor for instructions. The straightening of bent edges of plates, angles and other shapes shall be done by methods not likely to produce fracture or other injury. Following the completion of straightening of a bend or buckle, the surface of the metal shall be carefully inspected by the Contractor for evidence of incipient or other fractures. The Contractor shall immediately report to the Client/Consultants presence of any such evidence and act according to his instructions. Materials with irreparable defects shall be rejected by the Client/Consultant and such materials shall be replaced by the Contractor at own risk and cost without delay.

**19) Erection** – Erection of structural steelwork shall be carried out in accordance with IS: 800 and in an expeditious manner in conformity with the drawings and specifications. The suitability and capacity of all plant, equipment etc. used for erection shall be to the satisfaction of the Client/Consultant. The Contractor shall provide all construction and transport equipment, tools, tackles, consumables, materials, labor, supervision for erection including carrying out the following: Receiving, unloading, checking and moving into storage at site as outlined under general conditions including prompt attendance to all insurance matters as necessary for all materials arriving at site. Transporting from site storage, handling, rigging, assembling, bolting, welding, and satisfactory installation of all fabricated materials in proper location according to drawings and or as directed by the Client/Consultant. Checking centre lines, levels of all foundation's blocks including checking lines, level, position and plumb of all bolts and pockets. Any defect observed in the foundation shall be brought to the notice of the Client/Consultant. The Contractor shall fully satisfy himself regarding the correctness of the foundations before installing the fabricated structures on the foundation blocks. Aligning, lining, 57evelling, bolting, securely fixing in position in accordance with drawings or as directed by the Client/Consultant. Painting as per specification including supply of paint. Supply of all required consumables, construction and erection materials, including but not limited to gauges, welding, gases and rods, electrodes and wires, oxygen, acetylene, fuel, bolts, nuts, rivets, shims and temporary supports etc. as required for incidental works and for the completion of erection.

1. **Erection shall also include the following work:**

a. **All minor modification such as:**

- Removal of bends, kinks, twists etc. for parts damaged in transport and handling.
- Cutting, chipping, filing, grinding etc. if required for preparation and finishing of site connections.
- Reaming for use of next higher size of rivet or bolt for holes which do not register or which are damaged.
- Welding of connections in place of riveting or bolting for which holes or either not

drilled at all or wrongly drilled during fabrication. Welding in place of riveting or bolting will be permitted only at the discretion of the Client/Consultant.

**b. <u>The following shall be considered as a legitimate part of erection work</u>:**

- Re-fabrication of parts damaged beyond repair during transport and handling or is incorrectly fabricated.
- Fabrication of parts omitted during fabrication by error, or subsequently found necessary.
- Plug welding and re-drilling of holes which do not register and which cannot be reamed for use of next size of rivet or bolt.
- Drilling of holes which are either not drilled or drilled in incorrect positions during fabrication.

**<u>Setting out</u>** – The Contractor shall be responsible for the alignment and levels of foundations, correctness of foundation bolt centres, their projected height above the foundation tops, and length of threading provided and the provision and fitment of nuts for the foundation bolts. These shall be checked well in advance of starting erection work and the Contractor shall be responsible for any consequence for noncompliance thereof. Discrepancies, if any, shall immediately be brought to the notice of the Client / Consultant for his advice.

The contractor shall keep one set of reference axes and one bench mark level till the work is complete in all respect. These shall be used for setting out of structures. The Contractor shall assume full responsibility for the correct setting out of all steelwork and erecting it correctly as per alignment and levels shown on the drawings and plumbing of vertical members. Not with standing any assistance rendered to the Contractor by the Client/Consultant, if at any time during the progress of the work any error should appear or arise there in, on being required to do so, the Contractor at his own cost shall remove and amend the work to the satisfaction of the Client / Consultant.

**<u>Assembly and erection</u>**- Before starting erection, the Contractor shall submit to the Client/Consultant for approval, the method he proposes to follow and the number and the type of equipment and temporary work proposes to use for the erection. The approval of the Client / Consultant shall not be considered as relieving the Contractor from his responsibility for the loads which the erection equipment and temporary work will be required to carry or support. Adequate allowance and provision shall be made for lateral forces and wind loads. Drawings for such temporary work shall be submitted to the Client/Consultant for prior approval.

The Contractor shall plumb and level all steel work and shall thoroughly brace and guy the structures during erection to keep them plumb and rigid till completion. Erected parts of the structure shall be stable during all stages of erection and the structural elements to be erected shall be strong enough to bear erection loads. The stability of structures subject to the action of wind, dead weight and erection forces shall be obtained by observing specified sequence of erection of vertical & horizontal structural members by installing permanent and temporary bracings. As the work progresses, the steel members shall be securely bolted up to take care of all dead loads, wind and erection stresses, including those due to erection equipment or its

operation. No riveting, permanent bolting, welding or grouting shall be done until proper alignment has been obtained and approved by the Client / Consultant.

The Contractor shall provide adequate supervision at all stages of the work and examine each portion for accuracy before fabrication or erection is commenced. He shall also provide facilities such as, adequate temporary access ladders, gangways, tools and tackles, instruments etc. to the satisfaction of the Client / Consultant, for his inspection at any stage during erection. Irrespective of any inspection and tests made by the Client / Consultant, the Contractor shall be entirely responsible for the proper execution of the work, not-with-standing any approval, which may have been given by the Client / Consultant of the work or of tests carried out either by the Client / Consultant or by the Contractor.

**Preamble to Schedule of Items of Work** – The Schedule of Items of Work shall be read in conjunction and with reference to the contents of tender documents, BOQ, technical specifications and drawings and forms part of the tender.

The rates and prices in the priced Schedule of Items of Work shall be deemed to include, but not limited to, all labour, supervision, materials, erection, maintenance, Plant, temporary / preparatory works, insurance, overhead, profit, together with all general risks, liabilities and obligations set out or implied in the contract. All linear dimensions shall be measured to the nearest 0.01 m.

The rate shall include including all primary members, secondary members, roof sheeting, Louvers, cage ladder, fasteners, sealer/rope sealer, closures / filler stripes, ridge cap, flashing and trim, anchor bolts, canopy for openings provision etc. complete as per the drawing and as directed by the Engineer.

The whole cost of complying with the provisions of the contract shall be included in the items provided in the priced Schedule of Items of Work, and where no items are provided the cost shall be deemed to be distributed among the rates and prices entered for the related items of Work.

General directions and descriptions of work and material are not necessarily repeated nor summarized in the Schedule of Items of Work. Reference to the relevant sections of the Contract document shall be made before entering prices against each item in the priced Schedule of Items of Work.

The method of measurement of completed work for payment shall be in accordance with the modes stipulated in the Schedule of Items of Work and specification. Where such modes are not specified, the works shall be measured as per the relevant part of BIS codes 1200 (latest revisions.) or good engineering practice as approved by Client / Consultant.

The rates quoted shall be for works at all levels, locations and deemed to include all leads and lifts, storage, handling, wastage etc. Unless otherwise specified.

The tenderer shall furnish price in the Schedule of Quantities of Work in Indian Rupees only. There atis for all items shall include the following also:

i) All fibre or plastic plugs, screws, nails, pins, key and such other fixing accessories as per specification, expansion bolts / bolts, dash fasteners and machine screw for fixing to supports where required.

ii) Work at all heights, levels and locations.

iii) All sampling and testing for quality assurances.

iv) Supply and fixing of materials as specified in the Schedule of Quantities.

v) All forging, pressing, reducing to required size, shape and figure, drilling, tapping,

punching, sinking for screws, grinding etc., and every type of work that may be necessary to fabricate, finish, erect and fix in position all steel work in good, substantial and perfect manner. All necessary templates, patterns, molds, mock-ups etc.

**vi)** All welding/bolting/riveting as required and as shown.

**vii)** Necessary hoisting equipment, temporary supports, scaffolds, bracing, connection required for fabrication and erection including removing the same after fixing steel work in final position as per drawings.

**viii)** Preparation of surface, de-rusting, phosphating and application of primer coat and painting as specified.

**ix)** Anchoring/fixing the members to/in masonry/concrete as per site requirements.

- **CORRUGATED GALVANIZED/GALVLUM STEEL SHEET ROOFING**

Providing and fixing Profiled sheets made out of 0.50mm TCT 240Mpa 120 GSM color coated galvanized sheets with organic coating of 20 Microns Polyester coating of approved Color on the top over 5 Microns primer and 5 Microns back up epoxy coating at the bottom over 5 Microns primer. These sheets will be in hi-rib profile with 28mm crest height in 195mm pitch with 975mm covered width and length can be up to a maximum of 12mtrs. These sheets will be fixed to the purlins with hot dipped galvanized imported self- drilling fasteners with EPDM Washers for perfect sealing. All the joints will be sealed with sealants and stitched with stitching screws wherever necessary. Size, shape and pitch of corrugation as approved by Engineer but excluding the cost of purlins, rafters and trusses and including cutting to size and shape wherever required.

**Scope** – The scope of work is to provide profile roofing sheet on areas shown on the drawings. The work shall include the manufacture, supply, and installation of the roofing system on the roof of buildings as described in the schedule and shown on the drawings, including all fixings, flashings, finishing, etc.

**INSTALLATION:**

- **General** – The contractor shall supply and install the roofing as specified and as approved by the Engineer- in-charge with uniform and consistent product quality. All panels shall be factory formed and all materials shall be delivered to site with manufactures' name or trade mark, grade of coating, length, thickness and item

identification with respect to shop drawings marked on top of each item or shown on a label fixed to each bundle. The material may also be marked with a standard mark where applicable.

- **Accessories –** Cupping's, Flashings and Trims:
- All exposed flashing edges must have a 10mm hem and a 45° drip. All closure flashings shall be hemmed.
- **Material** – In substrate, and finish as external sheeting.
- **Fixing –** Cupping's shall be screwed to external sheeting at crests with head self-drilling stitching fasteners at max. 500mm centres along the length of the cupping/flashing. All fasteners must be installed at 90° to the material being fastened. If this is not done, the screw must be withdrawn and the hole closed with an oversize screw and EPDM washer.
- **Sealants –** All laps in flashing and capping shall be sealed with a non-hardening neutral cure silicon sealant.
- **Wind loading –** Permissible span versus load data table should be furnished with the offer. Load testing as per I.S. – 801, BS and AS shall have to be arranged by the sheeting manufacturer to demonstrate compliance with load / span data conforming to spans and loads (as per I.S. – 875 part- 3) at manufacturer's plant. External roof sheeting shall be capable of withstanding wind uplift and point loads as per I.S. codes for purlin support spacing as shown on the drawings.
- **Testing and Acceptance Criteria –**

**Materials** – Prior to delivery, manufacturers test certificates shall be supplied for all materials certifying grade and conformity with applicable standards. At owner's discretion on number and frequency, random samples drawn from material at site will be got tested at an independent test house/laboratory approved by the owner. The materials shall be tested for and demonstrate to meet performance criteria and requirements listed elsewhere.

**Load testing** – Profiles shall be load tested to justify load / span data furnished by manufacturer in accordance with I.S. – 801/AS/BS standards. Profiles must exhibit deflection less than L/150 underlive load and point load (as per I.S. – 875) and less than L/100 under wind load.

**MEASUREMENT:** The length and breadth shall be measured correct to a cm. for providing & fixing Galvanized steel Roofing System and the area calculated in sq.m.

Correct to two places of decimal. The length shall be measured correct to a cm. for providing & fixing galvanized steel Roofing System.

**RATES:** The rate for Providing & fixing Galvanized steel Roofing System shall include cost of all material and labor involved in all the operations described above.

- **HOLLOW SECTION**

This standard covers the requirements for hot and cold formed square and rectangular hollow steel sections for structural use.

**Standards –** The following Indian Standards are necessary adjuncts to this standard:

1. I.S. – 228 - Methods of chemical analysis of pig iron, cast iron and plain carbon and low alloy steels.
2. I.S. – 1387:1993 - General requirements for the supply of metallurgical materials (second revision).
3. I.S. – 1608:1995 - Mechanical testing of metals - Tensile testing (second revision).
4. I.S. – 4923:1997 - Hollow steel sections for structural use specification.

For the purpose of this standard, the following definitions shall apply.

- **Black Section -** Section as manufactured, but without any subsequent surface treatment.
- **Exact Length -** Specified length of a single section as mentioned by the purchaser.
- **Random Length -** Normal manufacturing lengths which may vary over a range of several metres. Alternatively, a length range agreed to between the manufacturer and the purchaser.
- **Section -** When used without qualification it refers to one length of square or rectangular hollow section covered by this specification.

A hollow section shall be designated by its outside dimensions and its thickness in millimeters and shall be further classified into CF or HF depending upon whether it is cold formed or hot formed. The hollow sections shall be manufactured from steel made by any approved process which, shall show not more than 0.050 percent of Sulphur and not more than 0.050 percent of phosphorus. The analysis of steel shall be carried out either by the methods specified in IS 228 and its relevant parts or any other established instrumental / chemical method. In case of dispute the procedure given in IS 228 and its relevant parts shall be the referee method.

Hollow sections may be varnished painted or oiled externally, if so, agreed between the purchaser and the supplier.

- **Packing** - Where hollow sections are to be bundled for transport, these shall, unless otherwise specified, be secured together by rope, soft wire or straps. If other packing is required, it shall be agreed to between the purchaser and the manufacturer.
- Each hollow section shall have the name of the manufacturer and size designation suitably marked on it. Alternatively, a label containing the particulars may be attached to a bundle of hollow sections. Other particulars required by the purchaser may be suitably-marked as mutually agreed. Hollow sections mayalso be marked with the Standard Mark.
- **Tolerance** - The following tolerances shall be permitted on hot formed hollow sections

| | | |
|---|---|---|
| a) | Thickness for all sizes | |
| | 1) Welded tubes | ± 10 % |
| | 2) Seamless tubes | + 17.5 % |
| b) | Outside dimensions of sides | ± 1 % of length of the side to be measured with a minimum of ± 0.5 mm |
| c) | Weight | |
| | 1) On individual length | + 10 %<br>- 8 % |
| | 2) On lots of 10 tonnes | ± 7.5 % |
| d) | Squareness of corner | $90^0 \pm 2^0$ |
| e) | Radii of corners - Outside | 3*t*, may where '*t*' is the thickness of section |
| f) | Length | |
| | 1) Exact Length | ± 6 mm. |
| | 2) Random Length | This may be obtained bY arrangement between the purchaser and manufacturer |

✓ **LIST OF APPROVED MAKES (Use of Equivalent requires prior approval of EIC)**

| | | |
|---|---|---|
| 1. | Structural steel | Tata, Vizag, SAIL, Jindal Steel & Power Ltd. or equivalent as approved |
| 2. | Welding rod | ESAB, Advani, Best Arc, Solar or Equivalent as approved. |
| 3. | Hollow Section Steel | The Hollow Sections manufactured by TATA, SAIL, or equivalent. |
| 4. | Foundation Bolts | The Foundation bolts shall be inserted in preformed hole in concrete and grouting with approved chemical grout complete as per specification and direction of the manufacturer of bolt (Hilti, Bosch, Fisher, Unbrako, TVS, Euro Build etc). The design load (tension) in each 32ø (dia.) Hilti bolt = 6000 kg and the same should be verified atsite by actual pull out test. |

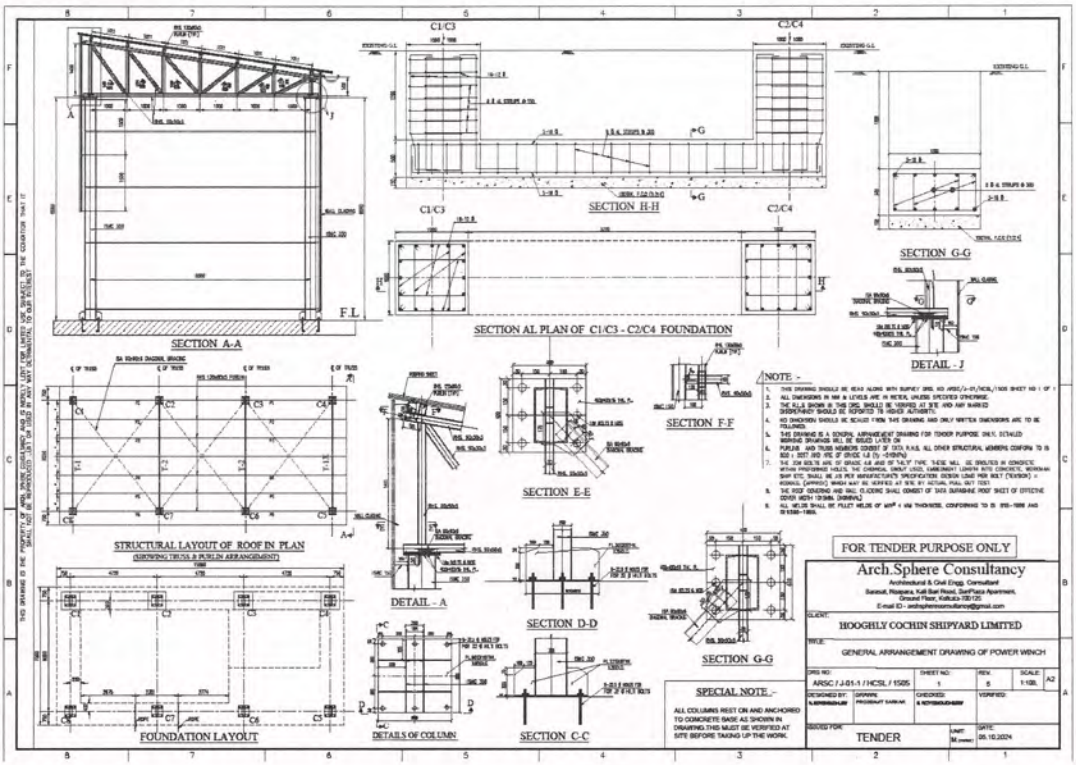
| | | |
|---|---|---|
| 5. | Cement | Ultra Tech, Ramco, ACC, India Cements, Dalmia, Ambuja, Vikram, JSW Cement etc. or any other approved brand |
| 6. | G.I. Sheet | Tata, Bansal, JSW, etc. or any other approved brand. |
| 7. | Gutter | Everest, Dhanraj Fibrotech, Nyflex, etc. or equivalent brand. |
| 8. | Paint | Asian, Berger, Nerolac, Jotun, Hempel, Birla Opus Sigma, Shalimar Paint etc. or any other approved brand. |

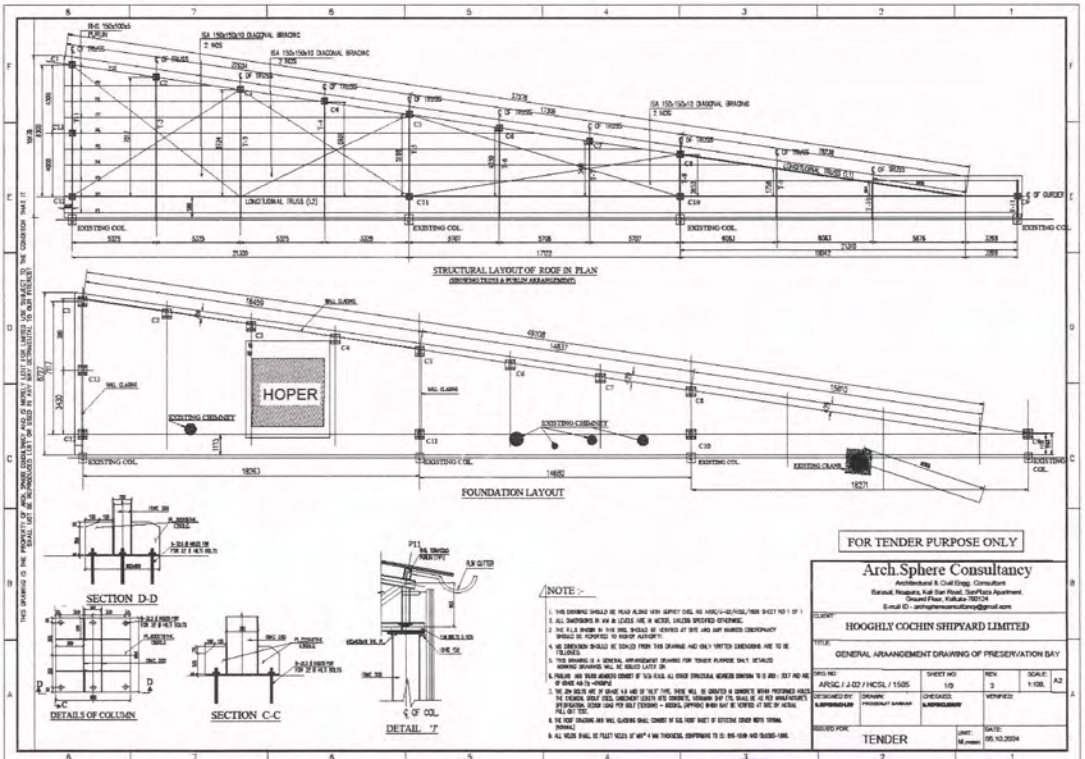
Signature and Seal of the Contractor (s)

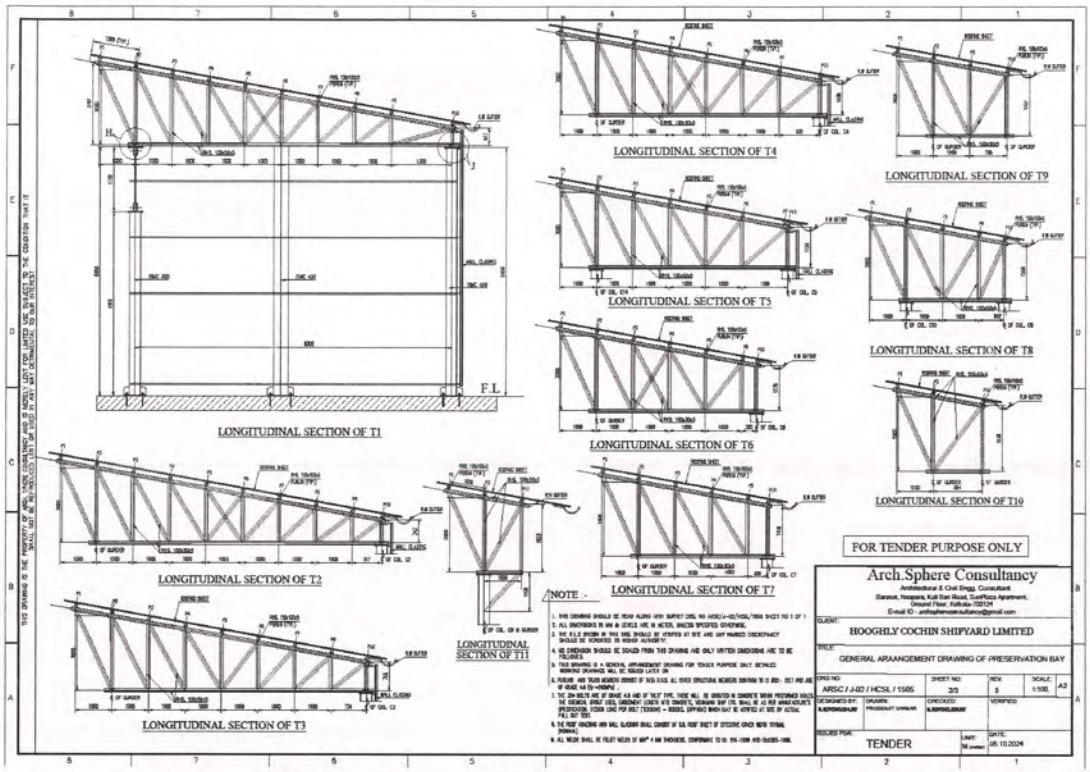
**For HCSL**

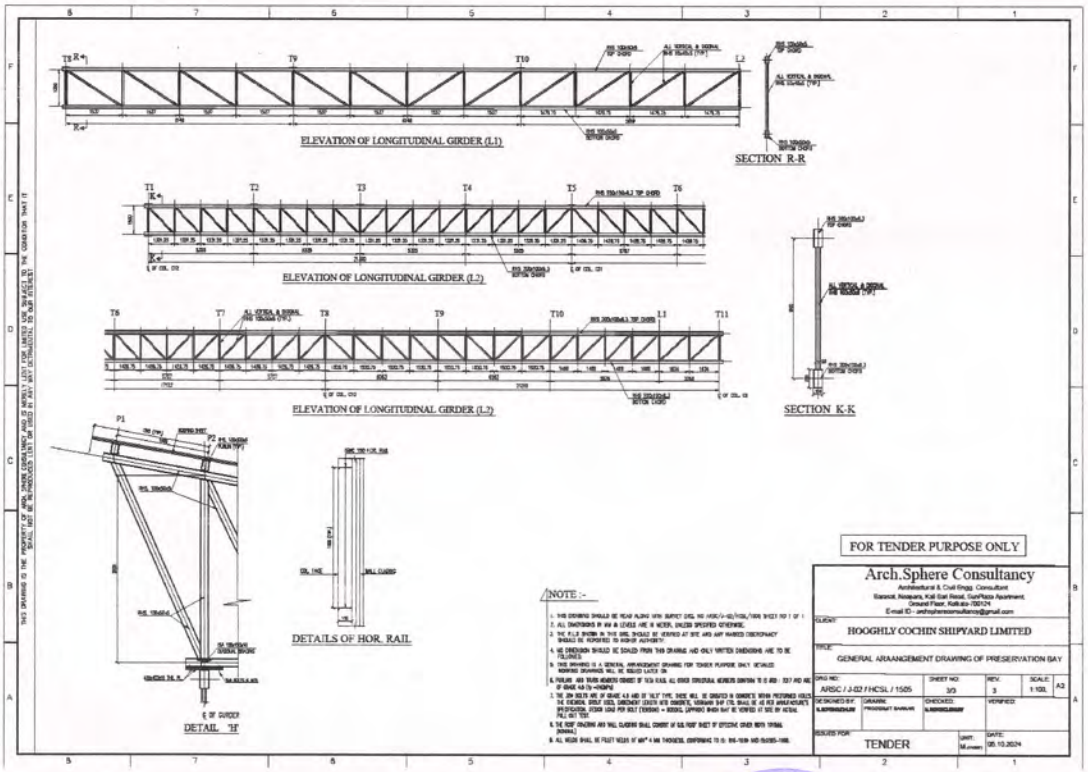
**Annexure-4**

## DRAWINGS


SECTION A-A
SECTION AL PLAN OF C1/C3 - C2/C4 FOUNDATION
SECTION H-H
SECTION G-G
DETAIL - J
STRUCTURAL LAYOUT OF ROOF IN PLAN
SECTION E-E
SECTION F-F
DETAIL - A
SECTION D-D
SECTION G-G
FOUNDATION LAYOUT
DETAILS OF COLUMN
SECTION C-C
NOTE :-
SPECIAL NOTE :-
ALL COLUMNS REST ON AND ANCHORED TO CONCRETE BASE AS SHOWN IN DRAWING.THIS MUST BE VERIFIED AT SITE BEFORE TAKING UP THE WORK.
FOR TENDER PURPOSE ONLY
Arch.Sphere Consultancy
HOOGHLY COCHIN SHIPYARD LIMITED
GENERAL ARRANGEMENT DRAWING OF POWER WINCH
ARSC / J-021-1 / HCSL / 1505
TENDER


STRUCTURAL LAYOUT OF ROOF IN PLAN
HOPER
FOUNDATION LAYOUT
SECTION D-D
DETAILS OF COLUMN
SECTION C-C
DETAIL 'F'
NOTE :-
FOR TENDER PURPOSE ONLY
Arch.Sphere Consultancy
HOOGHLY COCHIN SHIPYARD LIMITED
GENERAL ARRANGEMENT DRAWING OF PRESERVATION BAY
ARSC / J-021 / HCSL / 1505
TENDER


LONGITUDINAL SECTION OF T1
LONGITUDINAL SECTION OF T2
LONGITUDINAL SECTION OF T3
LONGITUDINAL SECTION OF T4
LONGITUDINAL SECTION OF T5
LONGITUDINAL SECTION OF T6
LONGITUDINAL SECTION OF T7
LONGITUDINAL SECTION OF T8
LONGITUDINAL SECTION OF T9
LONGITUDINAL SECTION OF T10
LONGITUDINAL SECTION OF T11
F.L
NOTE :-
FOR TENDER PURPOSE ONLY
Arch.Sphere Consultancy
HOOGHLY COCHIN SHIPYARD LIMITED
GENERAL ARAANGEMENT DRAWING OF PRESERVATION BAY
ARSC / J-02 / HCSL / 1505
TENDER


ELEVATION OF LONGITUDINAL GIRDER (L1)
SECTION R-R
ELEVATION OF LONGITUDINAL GIRDER (L2)
ELEVATION OF LONGITUDINAL GIRDER (L3)
SECTION K-K
DETAIL 'H'
DETAILS OF HOR. RAIL
NOTE :-
FOR TENDER PURPOSE ONLY
Arch.Sphere Consultancy
HOOGHLY COCHIN SHIPYARD LIMITED
GENERAL ARAANGEMENT DRAWING OF PRESERVATION BAY
ARSC / J-02 / HCSL / 1505
TENDER

**Annexure-5**

## Self-Declaration to be given by the bidder in Letter head

Bid's Reference No. & Date:

Bidder's Name & Address:

Person to be contacted:

Designation:

Telephone No.: Fax No.: Email:

1. We do hereby declare that we have not been debarred/black listed by HCSL or by any of the Public Sector Undertaking or Government department etc.
2. If HCSL finds that, we have been blacklisted/debarred by any of the Public Sector Undertaking or Government department, and then HCSL can reject the offer or terminate the contract at any point of time. In such case, we are aware that, EMD, security deposit, performance guarantee etc will be forfeited by HCSL. Further we are confirming herewith that, any loss that has happened to HCSL due to this will be compensated by us.

For and on behalf of the firm

(Firms Name & Address)

(Signature of Authorized Signatory)
Name:

Designation

Phone No.:

Seal:

Date: .....

Place:.....

**Annexure-6**

## Acceptance of the Terms & Conditions by the Tenderer

(To be given in the Letter Head of Contractor/Contractor)

1. I/We have understood clearly the Specifications, scope of materials, scope of work, General, Specific and Commercial Terms and Conditions of the Tender. I shall scrupulously abide by the same.
2. I/We have understood clearly that this is a supply/ installation/testing/commissioning work, for which I am/we are required to quote unite price + GST as applicable.
3. I/We certify that to the best of my /our knowledge the particulars furnished above is true.

(Signature with company seal)

For and on behalf of the company
Name & Designation of Signatory.

**Annexure-7**

| | COMPLIANCE STATEMENT-COMMERCIAL AND TECHNICAL | |
|---|---|---|

**TENDER NO: HCSL/CIVIL/TEN/2024/041 dated 19.11 2024**

We state that our Offer / Bid No. .....is in full compliance with the documents, except for the deviations listed below:

**LIST OF DEVIATIONS**

| Sl. No. | Description / Tender Reference | Reasons for Deviation |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |

Name of tenderer:

Date: Name & Designation Seal & Signature

**HOOGHLY COCHIN SHIPYARD LTD.**

**Annexure-8**

## POWER- OF-ATTORNEY

(ON THE LETTER HEAD OF THE COMPANY)

To
Chief Executive Officer

Administrative Building, HCSL Premises,

Satyen Bose Road, P.O.- Danesh Shaikh Lane,

Nazirgunge, Howrah, West Bengal 711109.

Dear Sir,

We_____
_____
____do hereby confirm that Mr./Ms._____(Name and Address) is /are authorized to represent us to bid, negotiate and conclude the agreement on our behalf with you against Tender No. _____

We confirm that we shall be bound by all and whatsoever our said agents shall commit.

Yours faithfully,

Signature:

Name &
Designation:

For & on behalf of: Signature, name and seal of the certifying authority

**Annexure-9**

**(ON THE LETTER HEAD OF THE COMPANY)**

**Electronic Payment Mandate Form**

(Mandate for receiving payments through RTGS/NEFT Hooghly Cochin Shipyard Ltd)

1) Vendor Name

2) Vendor Address with Phone No

3) Vendor Code

4) Permanent Account Number(PAN)

5) Particulars of Bank Account

a. Name of the Bank

b. Name of the Branch

c. Branch Code

d. NEFT Code of the Bank

e. City Name

f. Branch Location

g. Branch Telephone No.

h. Bank IFSC Code

i. 9-Digit MICR Code

**(Where MICR is starting with "0". Please take the correct code from your bank for proper identification of city, bank, branch)**

i. Type of the Account (S.B,Current or Cash Credit) with code (010/011/013)

j. Account Number (as appearing on thecheque book)

6 Email Address of Vendor

7 Date of Effect of
RTGS/NEFT in your Bank

(Please enclose a cancelled un-signed cheque leaf to enable us to verify the details mentioned above)

We hereby declare that the particulars given above are correct and complete. If the transaction is delayed or lost because of incomplete or incorrect information, we would not hold the company responsible.

(.....
...)

Signature of
Employee

Bank Certificate

We certify that_____ has an Account No._____ with us and we confirm that the details given above are correct as per our records.

Date:

(.....
)

Place:

Authorized official of
Bank

**Note: Please provide a cancelled cheque along with the form**

**Annexure-10**

## Security Instructions and HSE Guidelines

### Security Instructions

1. All contractors and their personnel are bound to comply with the security instructions/ orders of the Shipyard issued from time to time.
2. Movements of all persons entering through the Gate should be recorded at the Gate.
3. 100% checking and frisking of all contractors/contract workmen entering into the yard will be done
4. All vehicles carrying materials shall have material entry pass. Such material carrying vehicles shall be permitted entry to the Factory Area on production of material pass. All contractors and their workmen shall keep personal vehicles in the designated parking area.
5. All persons engaged for various works in the Yard through contractors should produce any of the following documents for entry at Site.

Attested copy of any of the documents mentioned below:

a) Photo identity card issued by government bodies
b) Electoral identity card with clear photo and address particulars
c) Driving license with photo and address particulars
d) Passport/ attested copy of passport with photo and address particulars

### HSE Guidelines

Occupational Health, Safety & Environmental requirements of Hooghly Cochin Shipyard Ltd. shall include the following:

1. The contractor (or a sub- contractor performing work on behalf of the contractor) is deemed to comply with the occupational health, safety and environmental policy of the company and also to all operational controls/standard operating procedures and shall undertake the work in total compliance with the HSE requirements of the Yard.
2. The contractor shall undertake the work in total compliance with all applicable legal /statutory requirements related to occupational health, safety and environment effective in Kolkata, in the state of West Bengal.
3. It is the sole responsibility of the contractor to assure that any subcontractors who shall perform works in company lands/facilities/worksites on behalf of the contractor, is also following all HSE requirements of the company and the health/safety/environmental rules effective in the state.
4. The contractor shall provide/implement and operate/practice all occupational health, safety and environmental management measures/facilities for their period of contract, in their activities/at their work sites, which shall be required by the health safety environmental rules established and effective in the state, at their own cost.
5. If any contractor failed to comply with or violated any clauses/requirements of occupational health, safety and environmental rules effective in the state, in their activities or at work sites and the same shall be exposed to the government or any competent authorities upon

inspections, the contractor shall solely be responsible for all liabilities caused by his/her action and shall be responsible for paying the penalty and taking the stipulated corrective actions insisted by the authorities within the specified time, at their own cost. Any liability to the company in this regard needs to be compensated by the contractor.

6. Upon the completion of the work, contractor shall clear the area and shall not leave any occupational health/safety/environmental liabilities to the company, from their activities at the worksites.
7. Lifting appliances should be fixed and securely anchored.
8. Any clarification related to HSE requirements of the yard, may be obtained by the contractor from the authorized representative of the contract, prior to the commencement of work.

**Annexure-11**

## DRAFT CONTRACT AGREEMENT

THIS AGREEMENT MADE ON XX.XX.2024 BETWEEN THE MANAGER – MARINE & CENTRAL SERVICES (Manager (M&CS), HOOGLY COCHIN SHIPYARD LIMITED, Administrative Building, HCSL Premises, Satyen Bose Road, P.O.- Danesh Shaikh Lane, Nazirgunge, Howrah, West Bengal 711109. (herein after called the "Project-in charge") which expression shall, unless excluded by or repugnant to the context, be deemed to include their successors in officeon one part of and M/S. ..... (hereinafter called "CONTRACTOR") on the other part. WHEREAS THE PROJECT-IN-CHARGE is desirous that certain work should be done viz. "Construction of Additional Civil work at HCSL, Howrah" and had accepted the tender by the Contractor for the construction, completion & guarantee of such work, NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this agreement words & expression shall have the same meaning as respectively assigned to them in the General, Special conditions of contract hereinafter referred to.
2. The following documents shall be deemed to form part and be read and construed as part of this agreement viz.

   a) The said tender including all corrigenda and amendments.
   b) The conditions of contract (General & Special).
   c) The tender schedule.
   d) All letters and e-mails from contractor
   e) All letters and e-mails by HCSL.
   f) HCSL Work Order
3. In consideration of the payment to be made by the Manager (M&CS), HCSL to the contractor (hereinafter called the contractor) hereby covenants with the Manager (M&CS), HCSL to construct, complete and guarantee the work in conformity in all respects, with the provisions of contract.

4. The Manager (M&CS), HCSL hereby covenants to pay the contractor the contract price, in consideration of the construction, completion & guarantee of the work at the time and in the manner prescribed by the contract.

5. In witness whereof the parties hereto have caused their respective common seals to be hereunto affixed (or have hereunto set their respective hand & seals) the day and year first above written.

For Hooghly Cochin Shipyard Limited,

In the presence of: -

1.

2.

For M/s.....

In the presence of: -

1.

2.

**Form of Bank Guarantee towards EMD**

(On stamp paper of value Rs.200/-)

This deed of GURANTEE made on .....Between HCSL on the one part and..... (name and address of the bank) of the other part is as follows:-

In consideration of the HCSL having allowed M/s..... (Hereinafter referred to as 'the Contractor') to submit Tender No..... to them without Earnest Money according to the conditions of such Tender Notification, We.....(here enter the name of 'the Bank') a Company incorporated under the .....Act and having its registered office at .....(hereinafter referred to as 'the bank')undertake to pay to HCSL on demand at Kolkata the sum of money payable as Earnest Money in respect of the Tender No.....made by the Contractor in case the Contractor withdraws the tender before the date of firmness stipulated or when the tender
is accepted by or on behalf of the HCSL the Contractor makes default in furnishing the Security Deposit or in entering into an agreement as required by the HCSL or otherwise commits any breach of the terms and conditions of the tender.

We, .....Bank Guarantee to pay the amount due and payable under this guarantee without any demur merely on demand from the HCSL. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. The liability of the surety shall be restricted to Rs.....(

This guarantee shall not be avoided, released or affected by any variation in the terms of the tender, acceptance or the contract between the Contractor and the HCSL or any neglect indulgence or forbearance by the HCSL.

This guarantee shall remain in full force and effect during the period that would be taken for the finalization of the tender and till the HCSL certifies that the terms and conditions of the said tender have been fully and properly carried out by the said contractor and accordingly discharges this guarantee or for Six Months from the date of issue of this guarantee whichever is earlier. A notice of the claim under this guarantee may be served on the Bank within Six Months after the said period in which case the same shall been force able against the Bank not withstanding the fact that the same is enforced after the expiry of the said period.

The decision of the CEO, HCSL as to whether the occasion or the ground has arisen for the demand of the surety form Bank shall be final. The HCSL shall be at liberty to act as though the Bank were the principal debtor.

We, the said Bank lastly undertake not to revoke this guarantee during its currency except with the previous consent of the HCSL in writing and agree that any change in the constitution of the said contractor or the said Bank shall not discharge our liability here under.

In witness whereof we have hereunto set our hand and sealthis.....day.....of..... .....Twothousand and .....

Place:

Date:

**PROFORMA OF BANK GUARANTEE FOR**

**PERFORMANCE GUARANTEE**

(On stamp paper of value Rs.200/-)

Guarantee No.....

Amount of Guarantee Rs.....

Guarantee Cover From.....

Last Date of Lodgement of Claim.....

1. In consideration of the Hooghly Cochin Shipyard Limited (hereinafter called HCSL)having agreed to exempt.....(hereinafter called "The said Contractor(s)" from the demand, under the terms and condition of an Agreement between HCSL and.....for the execution of the work of.....as per work order No.....dated..... (hereinafter called "the said agreement")of Performance guarantee/ Security Deposit for the due fulfilment by the said contractor(s)of the terms and conditions contained in the said agreement, on production of a Bank Guarantee for Rs.....(Rupees.....only)We..... .....(Name of Bank) (hereinafter referred to as "the Bank) at the request of.....contractor(s) do here by undertake to pay to HCSL an amount not exceeding Rs .....(Rupees.....only) on demand.

2. We (name of bank).....,....., do hereby unconditionally and irrevocably undertake to pay the Employer to the extent of Rs...../-(Rs..... Only) without any demur merely on a demand from the Employer stating that the amount claimed is due by way of loss or damage caused to or suffered by the Employer by reason of breach by the Contractor of any of the terms and conditions contained in the said contract. Any such

demand made on the (name of bank)..... shall be conclusive as regards to the amount due payable by the ban kunder this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs...../-(Rs.....Only)

3. Our liability under this present guarantee is absolute and unequivocal and we undertake to pay the Employer the amount so demanded without seeking the consent of the Contractor and notwithstanding the raising any dispute and/or disputes or filling any suitor proceeding before any court or tribunal Authority. The payment so made by us under this guarantee shall be a valid discharge of our liability for payment here under and the Contractor shall have no claim against us for making such payment.

4. Notwithstanding anything to the contrary, Employer's decision as to whether the Contractor has made any default or defaults and the amounts to which Employer is entitled by reason therefore shall be binding on us and we shall not be entitled to ask the Employer to establish the claims under the guarantee but will pay the same on demand without objection.

5. We, (name of bank),....., further agree that the guarantee herein contained shall remain in full force and effect during the periods that would be taken for the performance of the said contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said contract have been fully paid and its claims satisfied or discharged and till the Employer certifies that the terms and conditions of the said contract have been fully and properly carried out by the said contractor and accordingly discharges this guarantee. Unless a demand or claim under this guarantee is made on us in writing on or before ..... we shall be discharged from all liability under this guarantee thereafter.

6. This guarantee shall not be recoverable by us except with the written consent of the Employer and shall continue to be enforceable till ..... should it be necessary to extend this guarantee beyond the said date. we undertake to extend the validity of this guarantee for such further period as may be required by the Employer, subject to the Employer giving in writing to Contractor the request for extension, and such extension shall be given before the expiry of the forthwith become payable to the Employer, not withstanding that the contract is continuing and/or the Employer has or has not terminated the contract or preferred any claim against the Contractor.

7. We (name of bank)..., ..... further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting any manner our obligations hereunder to vary any of the terms and conditions of the said contract or to extend the time of guarantee by the said Contractor from time to time or to postpone for any time or from time to time exercise any of the powers exercisable by the Employer against the said Contractor and to forebear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor or any indulgence which under the law relating to sureties, would but for this provision, have effect of so relieving us.

8. This guarantee shall not in any way be affected due to change in our constitution or by your taking or varying or giving up any securities from the Contractor or any other person, firm or Employer on its behalf or by change in the constitution, winding up, dissolution, insolvency or death as the case may be of the contractor.

9. In order to give full effect to the Guarantee herein contained you shall be entitled to act as if we are your principal debtors in respect of all your claims against the contractor hereby guaranteed by us as aforesaid and we here by expressly waive all our right of surety ship and other rights if any which are in any way inconsistent with the above or any other provisions of this guarantee.

10. We, (name of bank)...,..... also undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

11. Notwithstanding anything contained herein above:

a. Our Liability under this guarantee shall not exceed Rs...../(Rs..... Only).

b. This Bank Guarantee shall be valid up to and including ..... and

c. We are liable to pay the guaranteed amount or any part thereof under this Bank

Guarantee only and only if you serve upon us a written claim or demand on or before the expiry of this Guarantee.

Dated the .....day of.....

SIGNATURE AND SEAL OF BANK

FULL ADDRESS OF THE BANK

**PROFORMA OF BANK GUARANTEE FOR SECURITY DEPOSIT**

(On stamp paper of value Rs.200/-)

Guarantee No.....
Amount of Guarantee Rs.....
Guarantee Cover From.....
Last Date of Lodgement of Claim.....

1. In consideration of the Hooghly Cochin Shipyard Limited (hereinafter called HCSL) having agreed to exempt.....(hereinafter called "The said Contractor(s)" from the demand, under the terms and condition of an Agreement between HCSL and .....for the execution of the work of .....as per work order No.....dated..... (hereinafter called "the said agreement") of Security Deposit for the due fulfilment by the said contractor(s) of the terms and conditions contained in the said agreement, on production of a Bank Guarantee for Rs.....(Rupees.....only) We.....(Name of Bank) (hereinafter referred to as "the Bank) at the request of.....contractor(s) do hereby undertake to pay to HCSL an amount not exceeding Rs.....(Rupees.....only) on demand.

2. We (name of bank).....,....., do hereby unconditionally and irrevocably undertake to pay the Employer to the extent of Rs...../-(Rs..... Only) without any demur merely on a demand from the Employer stating that the amount claimed is due by way of loss or damage caused to or suffered by the Employer by reason of breach by the Contractor of any of the terms and conditions contained in the said contract. Any such demand made on the (name of bank)..... shall be conclusive as regards to the amount due payable by the bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs...../-(Rs..... Only).

3. Our liability under this present guarantee is absolute and unequivocal and we undertake to pay

the Employer the amount so demanded without seeking the consent of the Contractor and
notwithstanding the raising any dispute and/or disputes or filling any suit or proceeding before
any court or tribunal Authority. The payment so made by us under this guarantee shall be a valid
discharge of our liability for payment here under and the Contractor shall have no claim against
us for making such payment.

4. Notwithstanding anything to the contrary, Employer's decision as to whether the Contractor has
made any default or defaults and the amounts to which Employer is entitled by reason therefore
shall be binding on us and we shall not be entitled to ask the Employer to establish the claims
under the guarantee but will pay the same on demand without objection.

5. We, (name of bank),....., further agree that the guarantee herein contained shall remain in full
force and effect during the periods that would be taken for the performance of the said contract
and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of
the said contract have been fully paid and its claims satisfied or discharged and till the Employer
certifies that the terms and conditions of the said contract have been fully and properly carried out
by the said contractor and accordingly discharges this guarantee. Unless a demand or claim under
this guarantee is made on us in writing on or before ..... we shall be discharged from all
liability under this guarantee thereafter.

6. This guarantee shall not be recoverable by us except with the written consent of the Employer and
shall continue to be enforceable till ..... should it be necessary to extend this guarantee
beyond the said date. we undertake to extend the validity of this guarantee for such further period
as may be required by the Employer, subject to the Employer giving in writing to Contractor the
request for extension, and such extension shall be given before the expiry of the forthwith become
payable to the Employer, notwithstanding that the contract is continuing and/or the Employer has
or has not terminated the contract or preferred any claim against the Contractor.

7. We (name of bank)..., ..... further agree with the Employer that the Employer shall have the
fullest liberty without our consent and without affecting any manner our obligations hereunder to
vary any of the terms and conditions of the said contract or to extend the time of guarantee by the
said Contractor from time to time or to postpone for any time or from time to time exercise any of
the powers exercisable by the Employer against the said Contractor and to forebear or enforce
any of the terms and conditions relating to the said Contract and we shall not be relieved from our
liability by reason of any such variation, or extension being granted to the said Contractor or any
indulgence which under the law relating to sureties, would but for this provision, have effect of so
relieving us.

8. This guarantee shall not in any way be affected due to change in our constitution or by your taking
or varying or giving up any securities from the Contractor or any other person, firm or Employer
on its behalf or by change in the constitution, winding up, dissolution, insolvency or death as the
case may be of the contractor.

9. In order to give full effect to the Guarantee herein contained you shall be entitled to act as if we
are your principal debtors in respect of all your claims against the contractor hereby guaranteed
by us as aforesaid and we here by expressly waive all our right of surety ship and other rights if
any which are in any way inconsistent with the above or any other provisions of this guarantee.

10. We, (name of bank)...,..... also undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

11. Notwithstanding anything contained herein above:
    a. Our Liability under this guarantee shall not exceed Rs...../-
    (Rs..... Only).
    b. This Bank Guarantee shall be valid up to and including ..... and
    c. We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only and only if you serve upon us a written claim or demand on or before the
    expiry of this Guarantee.

Dated the .....day of.....
SIGNATURE AND SEAL OF BANK
FULL ADDRESS OF THE BANK

**Annexure-12**

**VENDOR DETAILS (to be submitted along with TECHNICAL BID)**

| | | |
|---|---|---|
| **1** | Name of Bidder/Firm | |
| **2** | Registered office Address of Company/firm in Kolkata/Howrah:<br>Local office address at Kolkata/Howrah (if held): | |
| **3** | Telephone No./Fax No./Mobile No: | |
| **4** | E-mail address: | |
| **5** | Names of the contact person & Designation: | 1)<br>2)<br>3) |
| **6** | Type of Entity- Pro-praetorship / Partnership firm/company/NSIC/MSME Category etc. (Please attach registration certificate of Firm/Partnership agreement/proprietorship documents) | |
| **7** | Cost of Tender Details (DD No. Name of Bank) | |
| **8** | EMD Details (DD No. Name of Bank) | |
| **9** | PAN Card Number<br>(Self-attested copy of PAN card has to be Submitted) | |
| | GST Registration No.<br>(Self-attested copy has to be Submitted) | |
| **10** | Whether the agency has been blacklisted/de barred or given tender holiday or contract terminated before expiry of the contract period by any govt. autonomous bodies/organizations where bidder has provided services earlier due to deficiencies in service or misconduct etc. | Yes/No<br>(Please tick as applicable)<br>If yes, please furnish details on a separate sheet |

- **Certified that the above information is true to the best of our belief and information.**

**Place:**

**Date:**

**Signature of Supplier/Authorized signature of firm/agency:**

**Name of Supplier or authorized signatory of firm/agency:**

**Designation:**

**Annexure-13**

## FINANCIAL DETAILS OF BIDDER

| Sl. No. | Financial Year | Annual Turnover | Net Worth |
|---|---|---|---|
| 1 | 2022-23 | | |
| 2 | 2021-22 | | |
| 3 | 2020-21 | | |
| Sl. No. | Financial Year | | |
| 1 | 2022-23 | | |
| 2 | 2021-22 | | |
| 3 | 2020-21 | | |
| Certificate from the Statutory Auditors:<br><br>Name of Authorised Signatory:<br>Designation:<br>Name of firm:<br><br>(Signature of the Authorised Signatory)<br><br>Seal of firm | | | |

Note: The bidder shall furnish either Net Worth

Signature and seal of the Bidder(s)

**Annexure-14**

## FORMAT OF FINANCIAL CAPABILITY

Certified that to the best of our knowledge and information....., a customer of our bank, is respectable and can be treated as capable for executing the work upto a limit of

Rs..... (Rs.....).

It is clarified that this certificate is issued without any guarantee or responsibility on the bank or any of the officers.

Signature

Name & Designation of the Officer

Bank Seal

Date

**Note:** This certificate may be issued on the letter head of the bank and addressed to the Officer-in-charge, Hooghly Cochin Shipyard Ltd

**Annexure-15**

## DETAILS OF PAST EXPERIENCE OF BIDDERS FOR SIMILAR WORKS

(Shall be submitted under Company's letterhead)

| Sl. No. | Name & Location of Project | Owner's Complete address including Phone No. with contact Person | Value of Contract | Duration of Contract | | | Details of work including major items of work involved | Reference No. & Date of letter of intent & completion certificate enclosed |
|---|---|---|---|---|---|---|---|---|
| | | | | Commencement date | Scheduled completion date | Actual completion date | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| | | | | | | | | |
| | | | | | | | | |

Note: Attested copy of work completion certificate for Similar Works where experience is being claimed should be submitted.

Signature& Seal of the Bidder(s)

**Annexure-16**

## LIST OF KEY PERSONNEL FOR THE EXECUTION OF WORK

(Shall be submitted under Company's letterhead)

| Sl. No. | Name | Designation | Qualification | Experience |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

The data on their experiences should be supplied in separate sheets for each candidate.

**Note:** Candidates with more than 60 years will not be permitted to work inside HCSL

Signature& Seal of the Bidder(s)

**Annexure- 17**

## LIST OF PLANT, EQUIPMENT / MACHINERY

(Shall be submitted under Company's letterhead)

| Description of Equipment/Machinery | Make | Year of Manufacture | Capacity |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Signature& Seal of the Bidder(s)

*Annexure 18*

**HOOGHLY COCHIN SHIPYARD LIMITED**

A wholly owned Subsidiary of Cochin Shipyard Limited,

A Government of India Enterprise under Ministry of Ports, Shipping and Waterways

## Site Visit Slip

I, ....., authorized representative of .....

..... address: .....

..... Visited the site on ..... and understand the work completely related to **"MODIFICATION OF SHED STRUCTURES AT HCSL, NAZIRGUNGE UNIT, HOWRAH".**

**Stamp and Signature of the bidder,** **Signature of HCSL Official**

**Annexure-19**

## CHECK LIST

Bidder should compulsorily fill this check list and ensure that all details / documents as mentioned in the Tender Document is submitted along with their bid. Please Put Yes or No (Y/N) in the box and ensure compliance and specify the page no. of bid submitted.

| Sl. No. | Item | Check Box (Yes/No) | Page No of Bid Document |
|---|---|---|---|
| 1 | Submitted cost of EMD (Rs.1,00,000/- including taxes) in DD/Cheque/NEFT mode | | |
| 2 | Submitted Duly filled power of attorney in favour of signatory of bid documents | | |
| 3 | Submitted techno-commercial tender & Financial tender in separate closed envelopes | | |
| 4 | Attestation by authorized representative of bidder in all pages of tender document | | |
| 5 | Submitted un-priced Bill of Quantities in techno-commercial bid | | |
| 6 | Submitted Undertaking regarding acceptance of terms & conditions mentioned in the tender documents | | |
| 7 | Submitted Undertaking regarding not blacklisted/put on holiday/terminated by any Govt. dept. | | |
| 8 | Submitted Details of Annual Turnover Statement along with Audited Balance Sheet and Profit & Loss account for financial years 2020-21, 2021-22, 2022-23 (last 03 financial years) | | |
| 9 | Submitted details of present commitments, works under execution with percentage of completion | | |
| 10 | Submitted details of current litigation/arbitration if any | | |
| 11 | Submitted list of key personnel for the execution of work | | |
| 12 | Submitted site visit slip as per Annex-18 | | |
| 13 | Submitted NEFT details in relevant format | | |
| 14 | Submitted letter of bid | | |
| 15 | Submitted details of similar works executed | | |
| 16 | Submitted PAN, GST, EPF, ESIC details | | |
| 17 | Submitted undertaking regarding conducted Detailed site visit and evaluation and accordingly all required information and data have been collected. | | |

Signature & Seal of the Bidders(s)

**Annexure-20**

## PRICE BID

| HOOGHLY COCHIN SHIPYARD LIMITED<br>MODIFICATION OF SHED STRUCTURES AT HCSL, NAZIRGUNGE UNIT, HOWRAH<br>DETAILED ESTIMATE | | | | | |
|---|---|---|---|---|---|
| **SL. NO.** | **ITEM DESCRIPTION** | **QUANTITY** | **UNIT** | **RATE [Mentioned in words & figure]** | **TOTAL AMOUNT WITHOUT GST [Mentioned in words & figure]** |
| 1 | Earth work in excavation by mechanical means (Hydraulic excavator)/manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead dispose the items within the premises of HCSL and lift up to 2.0 m as directed by Engineer-in-charge. All kind of soils | 23.00 | cum. | | |
| 2 | Single Brick Flat Soling of picked jhama bricks including ramming and dressing bed to proper level and filling joints with local sand. | 12.00 | sqm. | | |
| 3 | Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m. | 7.00 | cum. | | |
| 4 | Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering - All work up to plinth level. 1:2:4 (1 cement: 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 20 mm nominal size derived from natural sources) | 1.80 | cum. | | |
| 5 | Cantering and shuttering including strutting, propping etc. and removal of form for Foundations, footings, bases of columns, etc. for mass concrete | 11.00 | sqm. | | |
| 6 | Providing and laying in position specified grade of reinforced cement concrete, excluding the cost of cantering, shuttering, finishing and reinforcement - All work up to plinth level.<br>1:1.5:3 (1 cement: 1.5 coarse sand (zone-III) derived from natural sources : 3 graded stone aggregate 20 mm nominal size derived from natural sources). | 10.80 | cum. | | |

| | | | | | |
|---|---|---|---|---|---|
| 7 | Supplying Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete up to plinth level. Grade of bars Fe - 500D or more. | 3050.00 | kg. | | |
| 8 | Providing and fixing 15 cm wide, 45 cm overall semi-circular plain G.S. sheet gutter with iron brackets 40x3mm size, bolts, nuts and washers etc., including making necessary connections with rain water pipes complete. | 75.00 | metre | | |
| 9 | Providing corrugated G.S. sheet roofing including vertical / curved surface fixed with polymer coated J or L hooks, bolts and nuts 8 mm diameter with bitumen and G.I. limpet washers or with G.I. limpet washers filled with white lead, including a coat of approved steel primer and two coats of approved paint on overlapping of sheets complete (up to any pitch in horizontal/ vertical or curved surfaces), excluding the cost of purlins, rafters and trusses and including cutting to size and shape wherever required. 1.00 mm thick with zinc coating not less than 275 gm/$m^2$ | 990.00 | sqm. | | |
| 10 | Providing and fixing on wall face unplasticized Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion,<br>(i) Single socketed pipes.<br>110 mm diameter | 42.00 | metre | | |
| 11 | Holding down bolt with nut including 100 x 100 x 6 mm plate washer at bottom fitted complete and packing the hole with cement concrete or cement grout as directed. 32MM DIA, 450 LONG | 208.00 | each | | |
| 12 | M.S. structural works with hollow sections (square or rectangular shape), conforming to IS: 806-1968 & IS:1161-1998) connected to one another with bracket, gusset, cleat as per design, drawing & direction of Engineer-in-Charge complete including cutting to requisite shape & size, fabrication including metal arc welding conforming to IS: 816-1969 & IS: 9595 using electrodes of approved make and brand conforming to IS:814-2004, haulage, hoisting and erection all complete. The rate includes the cost of all M.S. Hollow section, all consumables such as electrodes, gas and hire charges of all tools and plants and labour required for execution and all incidental charges (such as electricity, labour insurance) etc. complete | 48.30 | mt. | | |

| | | | | | |
|---|---|---|---|---|---|
| | Payment to be made on the basis of calculated weight of structural members of MS Hollow Section as specified in relevant IS code in finished work. Payment for gusset, bracket, cleat may be made by adding the actual weight of such items with weight of finished structural members. The rates are considered for a hight of erection 8 m. / 2nd floor level from the ground. Add 1.5 % extra over the rate for each additional floor or 4m. beyond the initial 8 m. or part thereof. | | | | |
| 13 | M.S. structural works in columns, beams etc. with simple rolled structural members (e.g. joists, angle, channel sections conforming to IS: 226, IS: 808 & SP (6)- 1964 connected to one another with bracket, gussets, cleats as per design, direction of Engineer-in-charge complete including cutting to requisite shape and length, fabrication with necessary bolting, metal arc welding conforming to IS: 816- 1956 & IS: 1995 using electrodes of approved make and brand conforming to IS:814-1957, haulage, hoisting and erection all complete. The rate includes the cost of rolled steel section, consumables such as electrodes, gas and hire charge of all tools and plants and labour required for the work including all incidental charges such as electricity charges, labour insurance charges etc.<br>Payment to be made on the basis of calculated weight of structural members only in finished work as per IS specified weight. Payment for gusset, bracket, cleat, rivets, bolts and nuts may be make by adding the actual weight of such items with the weight of finished structural members or 7% of weight for finished structural members weighing not less than 22.5 Kg. / m. or 15 % of weight for finished structural members weighing less than 22.5 Kg. / m. may be increased allow for bracket, cleat, rivet, bolts and nuts etc. and no separate payment being made for these items, as per direction of Engineer In<br>For built up sections / structural members of specified sections weighing not less than 22.5 Kg/m | 15.68 | mt. | | |
| 14 | Applying priming coat with ready mixed red oxide zinc chromate primer of approved brand and manufacture on steel galvanised iron/ steel works | 1547.00 | sqm. | | |
| 15 | Painting with aluminium paint of approved brand and manufacture to give an even shade. Two or more coats on new work | 1547.00 | sqm. | | |

| | |
|---|---|
| Total Amount - | |
| Add 18% GST - | |
| Grand Total - | |

Signature & Seal of Bidder(s)

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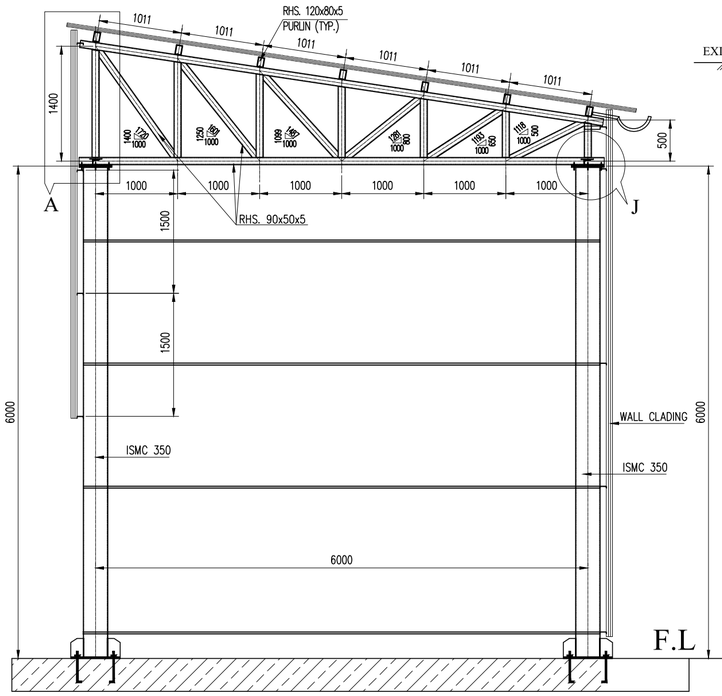


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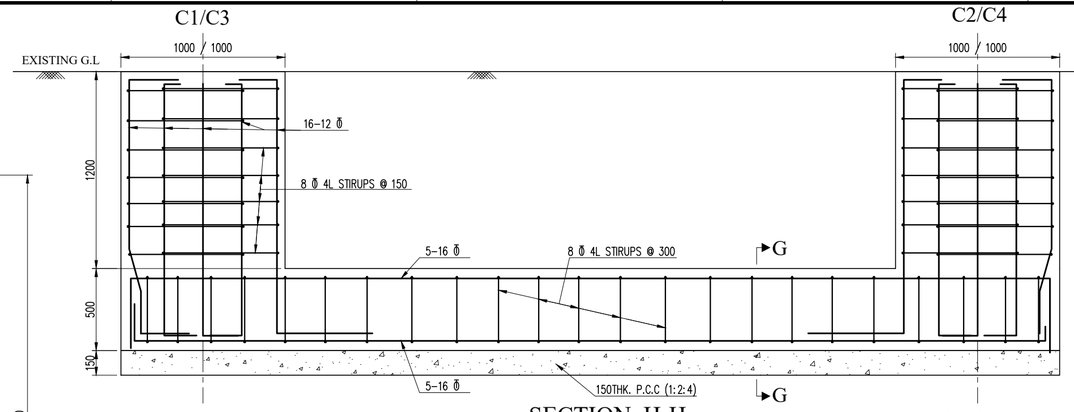
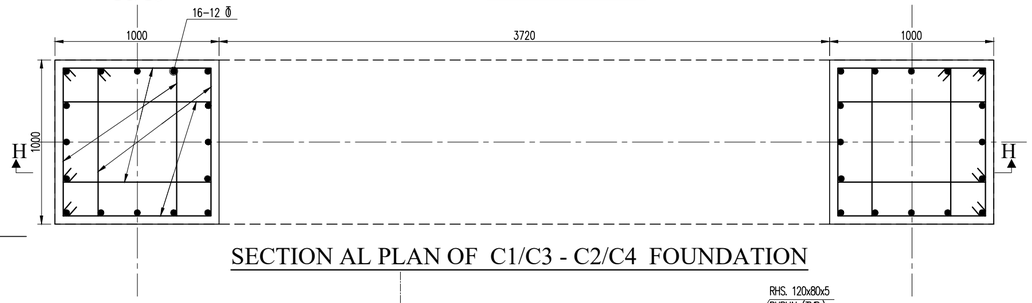
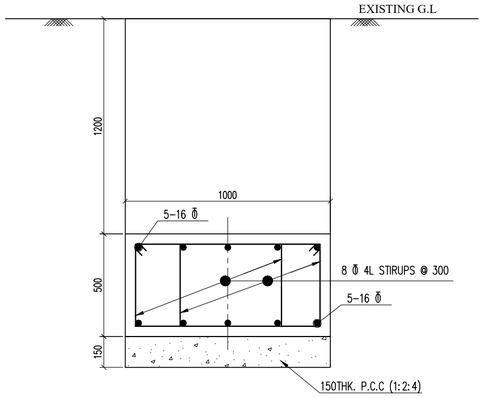


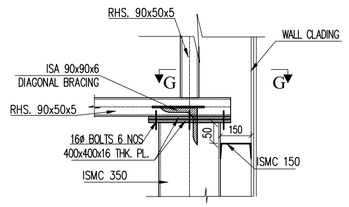

SECTION H-H




SECTION AL PLAN OF C1/C3 - C2/C4 FOUNDATION



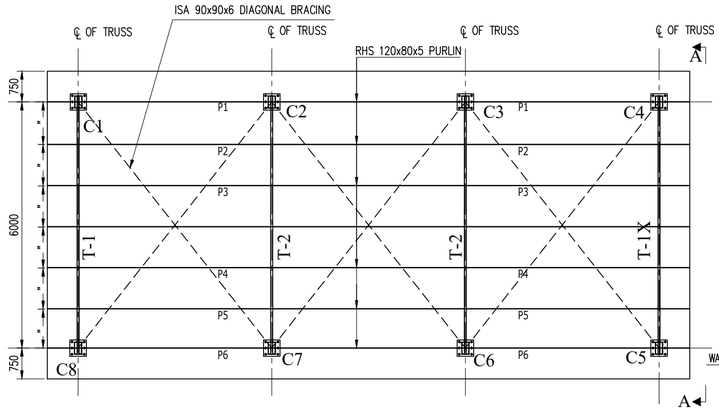

SECTION G-G



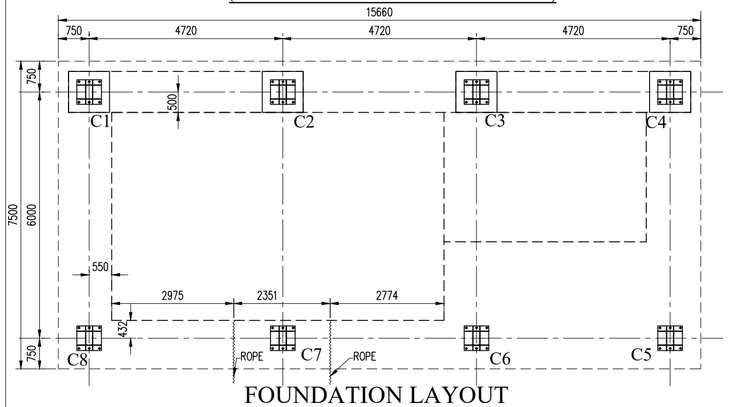

DETAIL - J

## NOTE :-

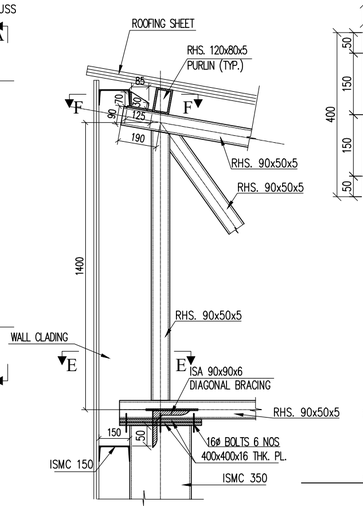
1. THIS DRAWING SHOULD BE READ ALONG WITH SURVEY DRG. NO ARSC/J-01/HCSL/1505 SHEET NO 1 OF 1
2. ALL DIMENSIONS IN MM & LEVELS ARE IN METER, UNLESS SPECIFIED OTHERWISE.
3. THE R.L.S SHOWN IN THIS DRG. SHOULD BE VERIFIED AT SITE AND ANY MARKED DISCREPANCY SHOULD BE REPORTED TO HIGHER AUTHORITY.
4. NO DIMENSION SHOULD BE SCALED FROM THIS DRAWING AND ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
5. THIS DRAWING IS A GENERAL ARRANGEMENT DRAWING FOR TENDER PURPOSE ONLY. DETAILED WORKING DRAWINGS WILL BE ISSUED LATER ON
6. PURLINS AND TRUSS MEMBERS CONSIST OF TATA R.H.S. ALL OTHER STRUCTURAL MEMBERS CONFORM TO IS 800 : 2017 AND ARE OF GRADE 4.6 (fy =240MPa)
7. THE 32ø BOLTS ARE OF GRADE 4.6 AND OF 'HILTI' TYPE. THESE WILL BE GROUTED IN CONCRETE WITHIN PREFORMED HOLES. THE CHEMICAL GROUT USED, EMBEDMENT LENGTH INTO CONCRETE, WORKMAN SHIP ETC. SHALL BE AS PER MANUFACTURE'S SPECIFICATION. DESIGN LOAD PER BOLT (TENSION) = 6000KG. (APPROX) WHICH MAY BE VERIFIED AT SITE BY ACTUAL PULL OUT TEST.
8. THE ROOF COVERING AND WALL CLADDING SHALL CONSIST OF TATA DURASHINE ROOF SHEET OF EFFECTIVE COVER WIDTH 1015MM. (NOMINAL)
9. ALL WELDS SHALL BE FILLET WELDS OF MIN$^{M}$ 4 MM THICKNESS, CONFORMING TO IS: 816–1969 AND IS: 9595–1996.



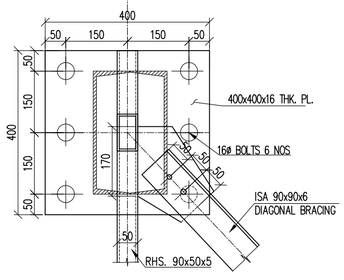

STRUCTURAL LAYOUT OF ROOF IN PLAN
(SHOWING TRUSS & PURLIN ARRANGEMENT)



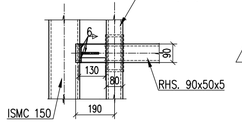

FOUNDATION LAYOUT



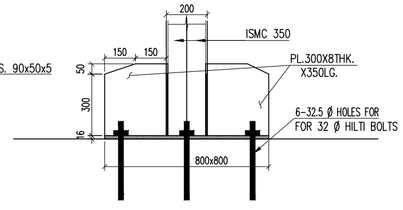

DETAIL - A



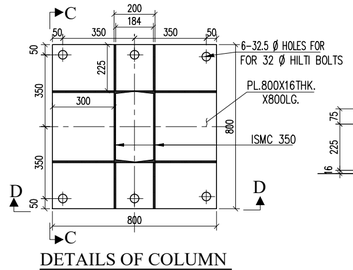

SECTION E-E



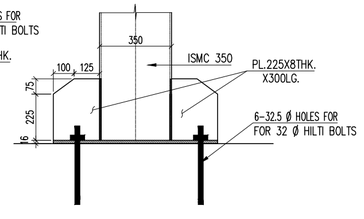

SECTION F-F



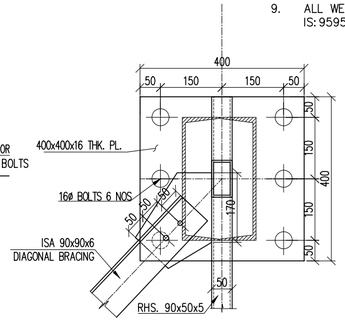

SECTION D-D




DETAILS OF COLUMN




SECTION C-C




SECTION G-G

## SPECIAL NOTE :-

ALL COLUMNS REST ON AND ANCHORED TO CONCRETE BASE AS SHOWN IN DRAWING.THIS MUST BE VERIFIED AT SITE BEFORE TAKING UP THE WORK.

FOR TENDER PURPOSE ONLY


# Arch.Sphere Consultancy

Architectural & Civil Engg. Consultant
Barasat, Noapara, Kali Bari Road, SunPlaza Apartment,
Ground Floor, Kolkata-700125
E-mail ID - archspherecONSULTANCY@gmail.com

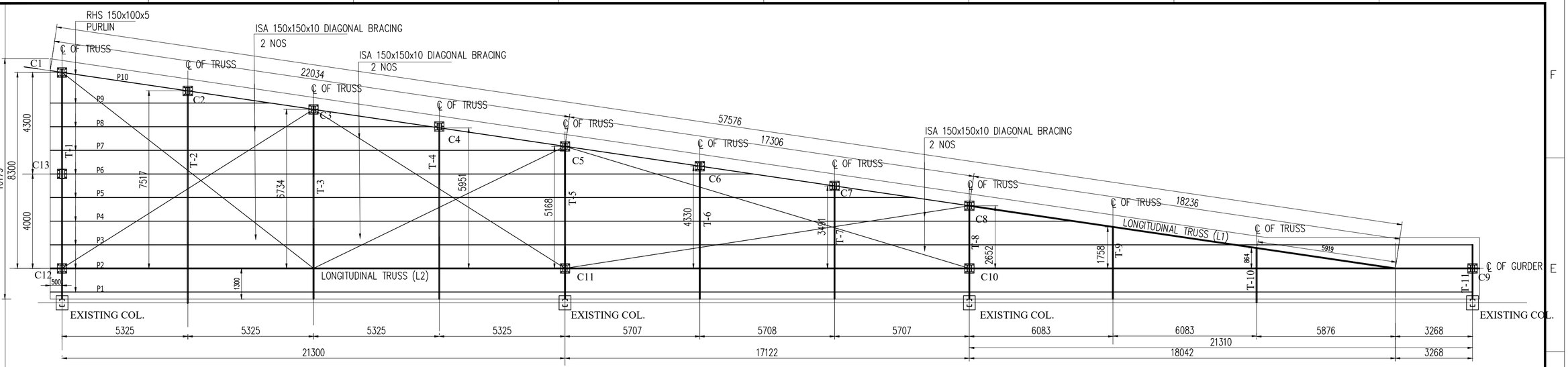

CLIENT:
HOOGHLY COCHIN SHIPYARD LIMITED

TITLE:
GENERAL ARRANGEMENT DRAWING OF POWER WINCH

| DRG NO: | SHEET NO: | REV. | SCALE: | |
|---|---|---|---|---|
| ARSC / J-01-1 / HCSL / 1505 | 1 | 5 | 1:100, | A2 |

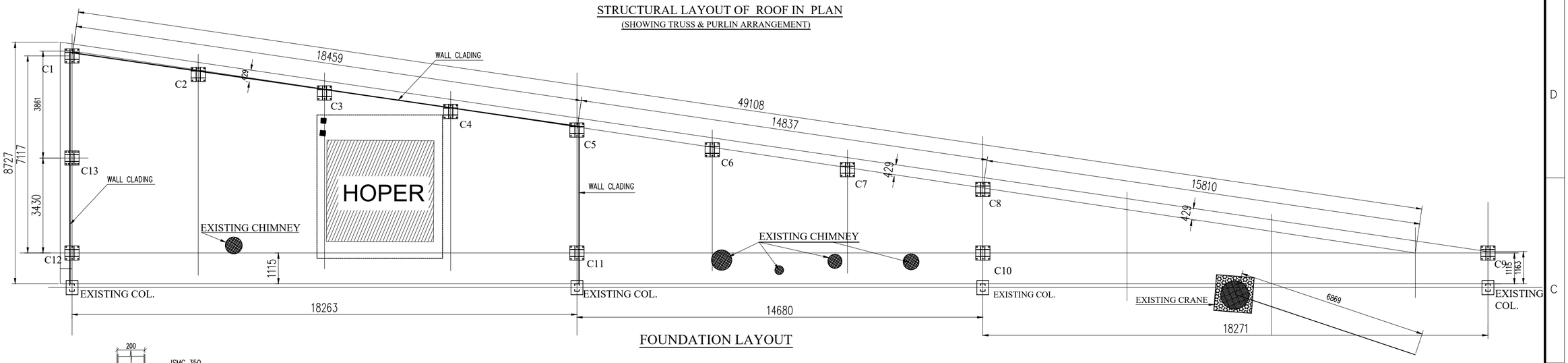
| DESIGNED BY: | DRAWN: | CHECKED: | VERIFIED: |
|---|---|---|---|
| N. ROYCHOUDHURY | PROSENJIT SARKAR | N. ROYCHOUDHURY | |

| ISSUED FOR: | UNIT: | DATE: |
|---|---|---|
| TENDER | M.(meter) | 05.10.2024 |

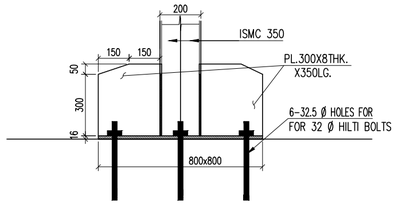



STRUCTURAL LAYOUT OF ROOF IN PLAN

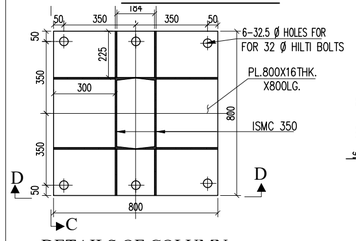
(SHOWING TRUSS & PURLIN ARRANGEMENT)



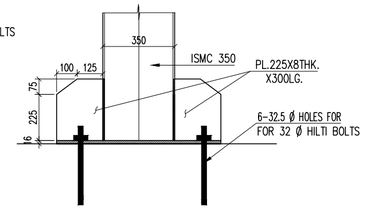

FOUNDATION LAYOUT



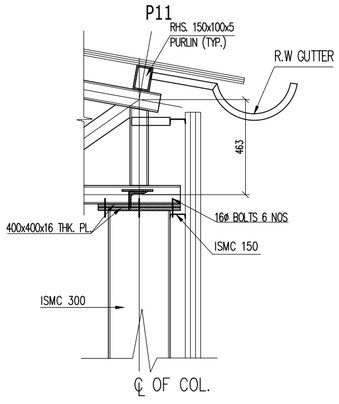

SECTION D-D




DETAILS OF COLUMN




SECTION C-C




DETAIL 'J'

NOTE :-

1. THIS DRAWING SHOULD BE READ ALONG WITH SURVEY DRG. NO ARSC/J-02/HCSL/1505 SHEET NO 1 OF 1
2. ALL DIMENSIONS IN MM & LEVELS ARE IN METER, UNLESS SPECIFIED OTHERWISE.
3. THE R.L.S SHOWN IN THIS DRG. SHOULD BE VERIFIED AT SITE AND ANY MARKED DISCREPANCY SHOULD BE REPORTED TO HIGHER AUTHORITY.
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8. THE ROOF COVERING AND WALL CLADDING SHALL CONSIST OF G.S. ROOF SHEET OF EFFECTIVE COVER WIDTH 1015MM. (NOMINAL)
9. ALL WELDS SHALL BE FILLET WELDS OF MIN$^{M}$ 4 MM THICKNESS, CONFORMING TO IS: 816–1969 AND IS:9595–1996.

FOR TENDER PURPOSE ONLY


Arch.Sphere Consultancy

Architectural & Civil Engg. Consultant

Barasat, Noapara, Kali Bari Road, SunPlaza Apartment, Ground Floor, Kolkata-700124

E-mail ID - archsphereconsultancy@gmail.com

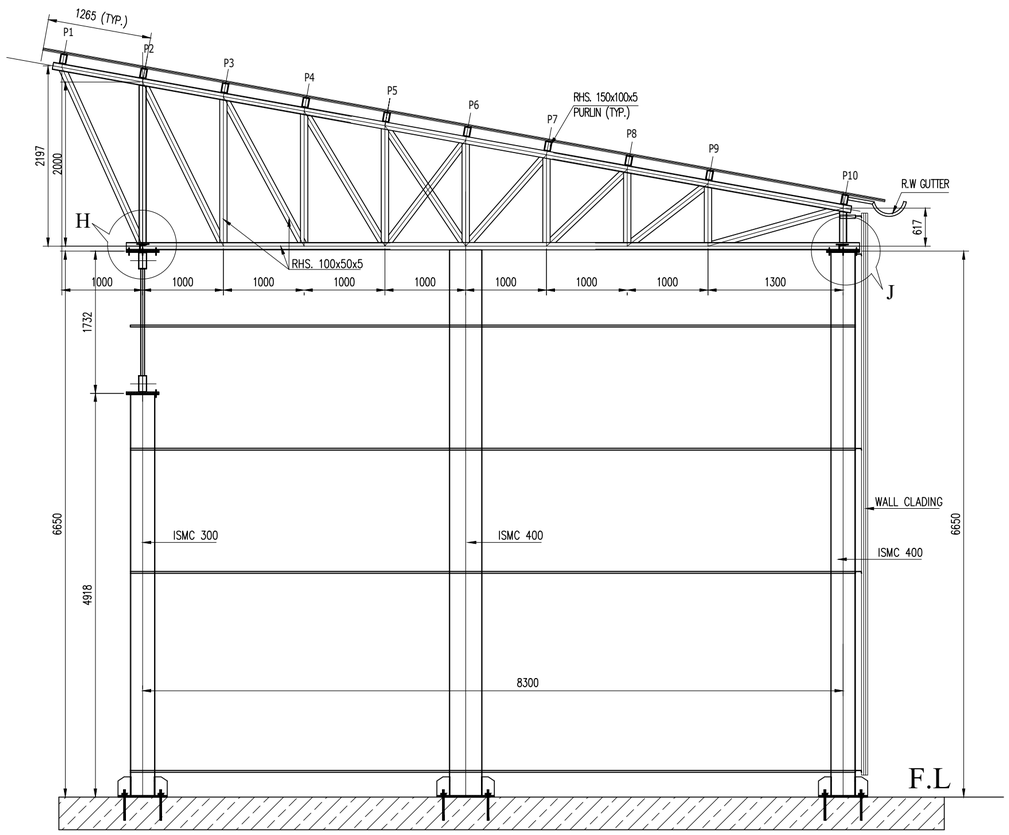

CLIENT: HOOGHLY COCHIN SHIPYARD LIMITED

TITLE: GENERAL ARAANGEMENT DRAWING OF PRESERVATION BAY

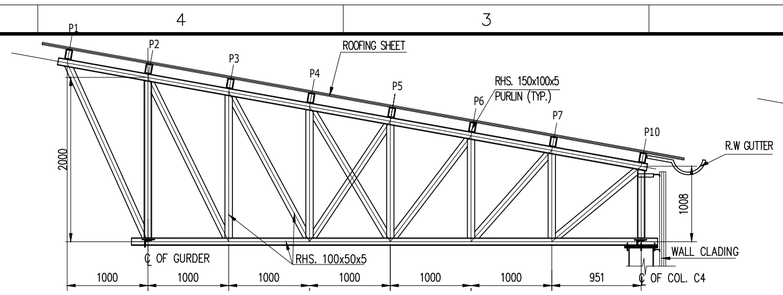
| DRG NO: | SHEET NO: | REV. | SCALE: | |
|---|---|---|---|---|
| ARSC / J-02 / HCSL / 1505 | 1/3 | 3 | 1:100, | A2 |

| DESIGNED BY: | DRAWN: | CHECKED: | VERIFIED: |
|---|---|---|---|
| N. ROYCHOUDHURY | PROSENJIT SARKAR | N. ROYCHOUDHURY | |

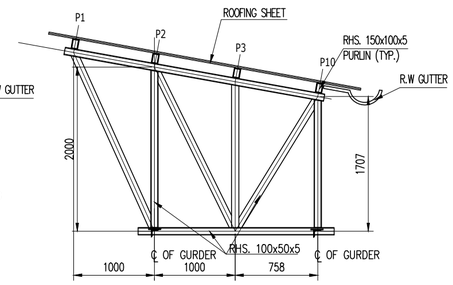
| ISSUED FOR: | UNIT: | DATE: |
|---|---|---|
| TENDER | M.(meter) | 05.10.2024 |



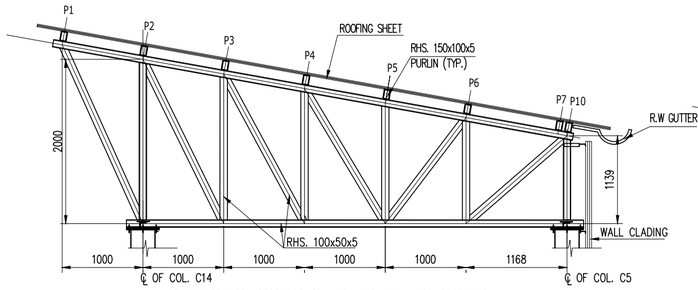

LONGITUDINAL SECTION OF T1



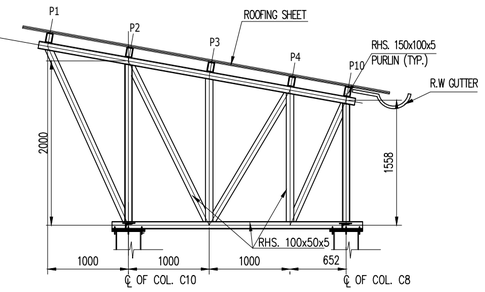

LONGITUDINAL SECTION OF T4



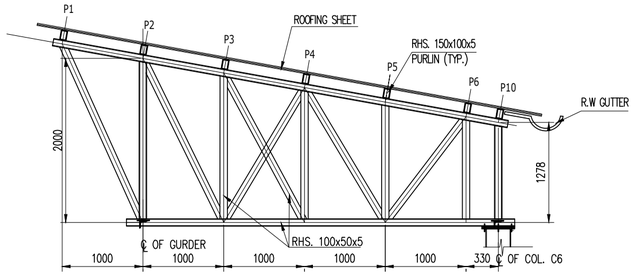

LONGITUDINAL SECTION OF T9



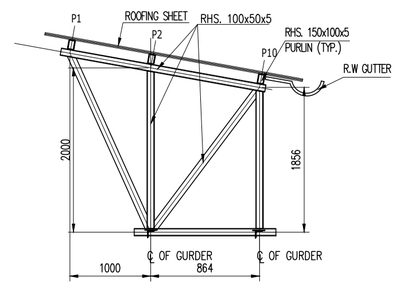

LONGITUDINAL SECTION OF T5



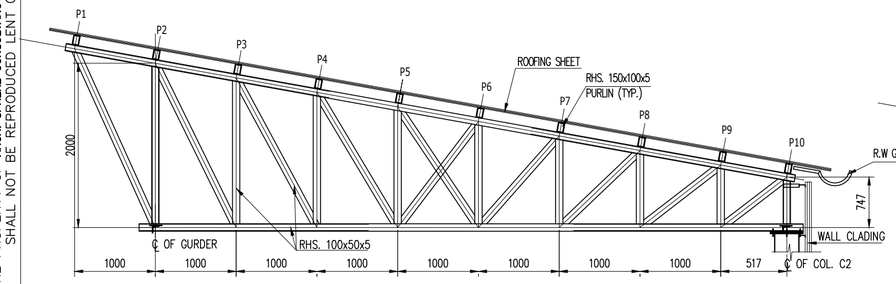

LONGITUDINAL SECTION OF T8



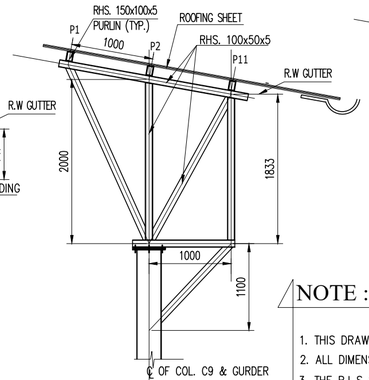

LONGITUDINAL SECTION OF T6



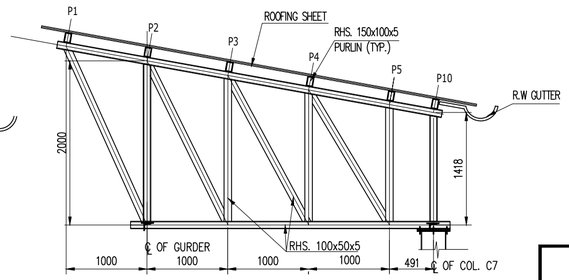

LONGITUDINAL SECTION OF T10



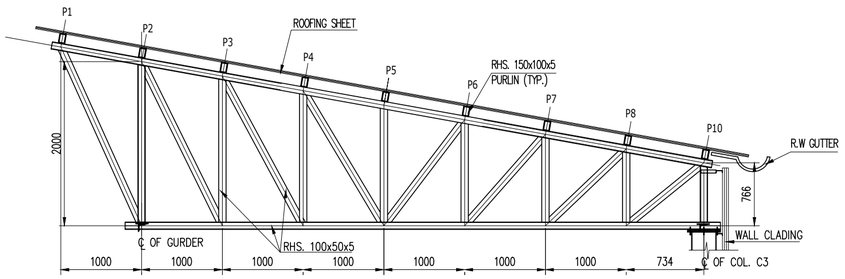

LONGITUDINAL SECTION OF T2




LONGITUDINAL SECTION OF T11




LONGITUDINAL SECTION OF T7




LONGITUDINAL SECTION OF T3

NOTE :-

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2. ALL DIMENSIONS IN MM & LEVELS ARE IN METER, UNLESS SPECIFIED OTHERWISE.
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6. PURLINS AND TRUSS MEMBERS CONSIST OF TATA R.H.S. ALL OTHER STRUCTURAL MEMBERS CONFORM TO IS 800 : 2017 AND ARE OF GRADE 4.6 (fy =240MPa)
7. THE 32ø BOLTS ARE OF GRADE 4.6 AND OF 'HILTI' TYPE. THESE WILL BE GROUTED IN CONCRETE WITHIN PREFORMED HOLES. THE CHEMICAL GROUT USED, EMBEDMENT LENGTH INTO CONCRETE, WORKMAN SHIP ETC. SHALL BE AS PER MANUFACTURE'S SPECIFICATION. DESIGN LOAD PER BOLT (TENSION) = 6000KG. (APPROX) WHICH MAY BE VERIFIED AT SITE BY ACTUAL PULL OUT TEST.
8. THE ROOF COVERING AND WALL CLADDING SHALL CONSIST OF G.S. ROOF SHEET OF EFFECTIVE COVER WIDTH 1015MM. (NOMINAL)
9. ALL WELDS SHALL BE FILLET WELDS OF MIN$^{M}$ 4 MM THICKNESS, CONFORMING TO IS: 816-1969 AND IS:9595-1996.

FOR TENDER PURPOSE ONLY


# Arch.Sphere Consultancy

Architectural & Civil Engg. Consultant
Barasat, Noapara, Kali Bari Road, SunPlaza Apartment,
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E-mail ID - archspshereconsultancy@gmail.com

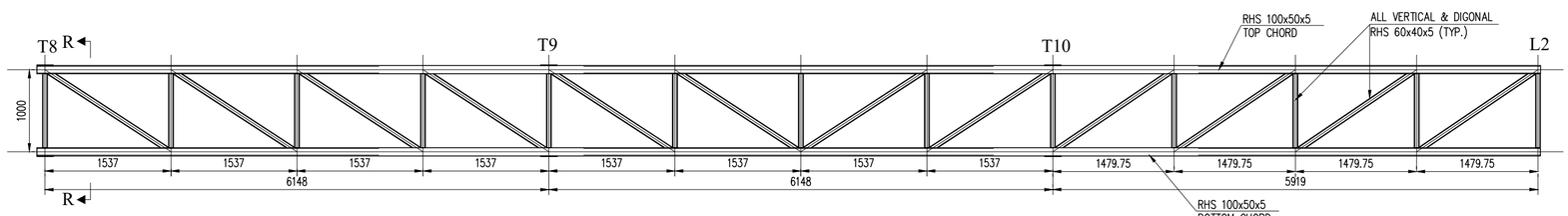

CLIENT: HOOGHLY COCHIN SHIPYARD LIMITED

TITLE: GENERAL ARAANGEMENT DRAWING OF PRESERVATION BAY

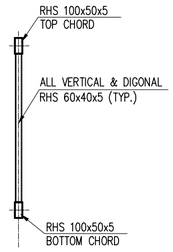
| DRG NO: | SHEET NO: | REV. | SCALE: | |
|---|---|---|---|---|
| ARSC / J-02 / HCSL / 1505 | 2/3 | 3 | 1:100, | A2 |

| DESIGNED BY: | DRAWN: | CHECKED: | VERIFIED: |
|---|---|---|---|
| N. ROYCHOUDHURY | PROSENJIT SARKAR | N. ROYCHOUDHURY | |

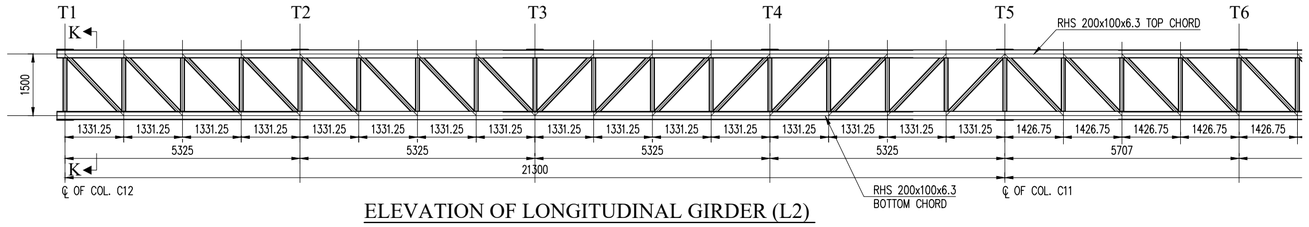
| ISSUED FOR: | UNIT: | DATE: |
|---|---|---|
| TENDER | M.(meter) | 05.10.2024 |



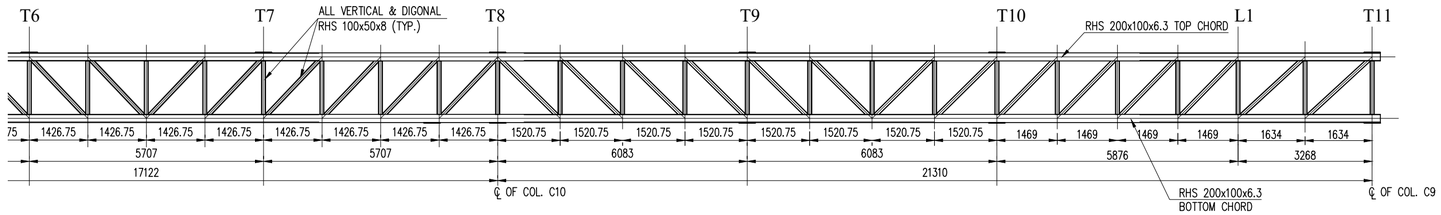

ELEVATION OF LONGITUDINAL GIRDER (L1)



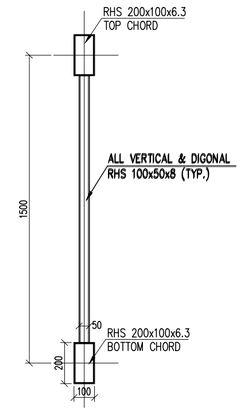

SECTION R-R



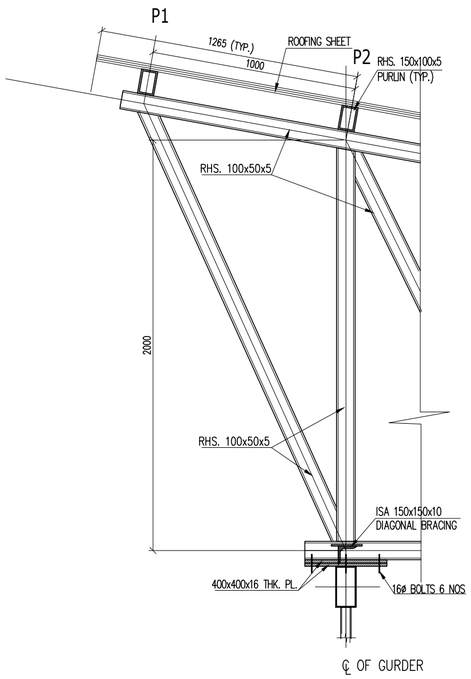

ELEVATION OF LONGITUDINAL GIRDER (L2)



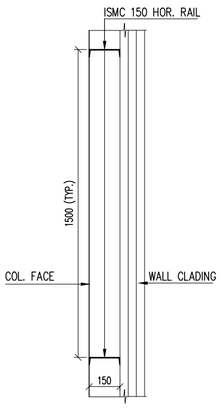

ELEVATION OF LONGITUDINAL GIRDER (L2)




SECTION K-K




DETAIL 'H'




DETAILS OF HOR. RAIL

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