

INDIAN INSTITUTE OF ASTROPHYSICS

2ND BLOCK, KORAMANGALA,

BENGALURU – 560034.

TENDER DOCUMENT

Name of Work: Construction of Proposed two and four wheeler parking shed at CREST Campus, I.I.A, Hosakote.

Tender Notice No.: 44/IIA/CIVIL/PARKING SHED/CREST/HOSAKOTE/2021-22 Dated 26.07.2021

INDIAN INSTITUTE OF ASTROPHYSICS

Ph.080-2554 1200/1259/1359 , Fax: 25534043

Website: www.iiap.res.in



INDIAN INSTITUTE OF ASTROPHYSICS

2ND BLOCK, KORAMANGALA,

BENGALURU-560 034

Tender Notice No.: 44/IIA/CIVIL/PARKING SHED/CREST/HOSAKOTE/2021-22 Dated 26.07.2021

The Director, Indian Institute of Astrophysics invites sealed item rate tenders in the prescribed format for the following work from appropriate registered contractors in state PWD, CPWD, MES, Scientific institutions and private body contractors who have executed works of similar nature.

Sl. No.	Name of the work	Estimated cost (Including all taxes) in Rs.	Time for completion (including allseason)	EMD Rs.	Cost of tender document Rs.
1.	Construction of Proposed two and four wheeler parking shed at CREST Campus, I.I.A, Hosakote.	30,50,000.00	06 month	61,000/-	1,000/-

The Tender Document can be viewed and downloaded from our website www.iap.res.in/tenders.htm. The interested tenderers may at their option download the same, as **“NO” hard copies of Tender document shall be provided from this office** and submit their offers along with EMD (refundable) & Tender fee (non-refundable) prescribed therein, only in the form of Demand Draft drawn in favor of **“Indian Institute of Astrophysics”** payable at Bangalore. The DD shall be valid for a period of forty five (45) days beyond the date of opening of bids.

The Offers containing complete tender document duly filled with price (Bill of Quantities) and complete credentials including experience certificates should be submitted in sealed cover super scribing the envelope with **“Construction of Proposed two and four wheeler parking shed at CREST Campus, I.I.A, Hosakote.”**. Notice No. and due date”, shall be submitted addressed to **The Director, Indian Institute of Astrophysics, 2nd Block, Koramangala, Bengaluru– 560 034**. **The last date of submission of bid is 27.08.2021 on or before 15:00 hrs**. The bids will be opened at **15:30 hrs on the same day** in the presence of attending tenderers or their authorized representatives.

ELIGIBILITY CRITERIA

The firms who fulfill the following requirements shall be eligible to submit their bids. Joint ventures are not acceptable.

- (i) Tendering Company shall be professionally managed and resourceful for taking up similar jobs.

(ii) The experience of having successfully completed similar work during last 7 years as on 30.06.2021 should be either of the following:

a) Three similar completed works costing not less than the amount equal to 40% of the estimated cost.

OR

b) Two similar completed works costing not less than the amount equal to 50% of the estimated cost.

OR

c) One similar completed work costing not less than the amount equal to 80% of the estimated cost.

Similar work shall mean:

Similar Building experience shall mean that the bidder shall have an experience in developing a parking lot which includes civil, electrical, fabrication works, pavement etc. In support of this, the bidder must submit completion Certificate / work orders from the Client, and the same shall be included in the Bid as Supporting Documents.

Documentary Proof for Eligibility

Self attested/certified copy of work orders and completion certificates issued by the authority concerned to establish work experience shall be attached to the tender document. Copies of the Income Tax Returns along with Financial Statements such Balance Sheet, P&L Account etc for the last 3 Financial Years shall be attached to the tender document.

Valid Contract License issued by the competent authority shall be enclosed.

OTHER CONDITIONS

1. Technical & price Bids supported by the above information should be submitted in a Sealed envelope duly super scribed with the name of work, tender notice No., Last date of submission. The completed Bids will be received by this office **up to 15:00 Hrs. on 27.08.2021**
2. If any information furnished by the tenderers is found incorrect at a later stage, the firm shall be liable to be debarred from tendering and taking up of work in I.I.A. The Institute reserves the right to verify the particulars furnished by the tenderers.
3. The firms should submit their offers along with EMD/Tender fee of prescribed amount up to **15:00 Hrs. on 27.08.2021.**
4. Incomplete Technical Bids are liable for rejection.
5. Late & / delayed offer will not be considered.
6. IIA is not responsible for any delay / loss of documents in transit.
7. The Tenders will be opened **on 27.08.2021 at 15:30 hours at I.I.A, Bengaluru** in the presence of bidders or their authorized representatives. The representatives of the tenderers should bring authorization letter / identification while attending for opening of the tenders.
8. IIA reserves the right to reject any or all tenders without assigning any reasons.

Administrative Officer
IIA, Bengaluru-34

INDIAN INSTITUTE OF ASTROPHYSICS

2nd Block, Koramangala, Bengaluru-560 034

**Tender Notice No.: 44/IIA/CIVIL/PARKING SHED/CREST/HOSAKOTE/2021-22 Dated
26.07.2021**

M/s.

Dear Sir,

The Director, Indian Institute of Astrophysics, Bengaluru invites Sealed Tenders for the work of **“Construction of Proposed two and four wheeler parking shed at CREST Campus, I.I.A, Hosakote.”** The Tender Terms enclosed herewith may be noted carefully. If you are in a position to quote for the work in accordance with the requirement, please submit your quotation in the attached Tender Form.

Your Tender must reach this office on or before the date and time indicated in the Tender Schedule.

Thanking you,

Yours faithfully,

Encl: as above.

Administrative Officer
for Director

3. INSTRUCTIONS TO THE TENDERERS

1. The tenderers should submit the entire tender document with duly filled with price and technical details of the firm. All the pages of document shall be duly signed.
2. **The rates quoted by the tenderer in the schedule shall be inclusive of all taxes and levies. Such rates should provide the break-up of the cost and applicable taxes, levies etc.**
3. The Offers should be submitted in sealed envelope superscribed with “Tender for “**Construction of Proposed two and four wheeler parking shed at CREST Campus, I.I.A, Hosakote.**”, Notice No. and due date”.
4. If any clarification is required should be obtained before filling Tender Document.
5. If any discrepancy is there between figures and words for quoted rates, the lower of the two will be considered for the purpose of evaluation.
6. The tenderers who do not fulfill all or any of the tender conditions or if the tender is Incomplete in any respect, will be summarily rejected.
7. The Institute is not bound to accept the lowest tender.
8. Even though the Tenderers meet the above criteria, they are subject to be disqualified if they have (The Institute reserves the right to verify the particulars furnished by the tenderers.)
 - Made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirement, Conditional bid / proposal: and / or
 - Record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures etc.
9. Any effort by the contractor to influence the client in the bid evaluation, bid comparison or contract award decision results in rejection of the contractors bid.
10. Financial offer will be considered if the bidders fulfill all the technical and financial eligibility criteria as per tender.
11. Late & / delayed offer will not be considered at all.
12. IIA is not responsible for any delay / loss of documents in transit.
13. No bids will be considered if prescribed Tender Fee and EMD are not found with the bid.
14. All overwriting and corrections shall be duly attested with stamp & signature.
15. Corrigendum's / modifications / corrections, if any, will be published in the website only.
16. The Director, Indian Institute of Astrophysics reserves the right to accept or reject the tenders in full or part without assigning any reason thereof.

17. Performance certificates of the completed works issued by the I.I.A to be enclosed in the technical bid.
18. The committee constituted by the Director may inspect the previously completed or the ongoing works of the bidders to assess their technical suitability for the tendered work.
19. All the pages of the tender document to be signed by the contractor and submit them in the respective sealed covers.
20. The successful contractor will have to execute an Agreement with the Institute within 21 days of receipt of Letter of Intent / Work Order.
- 21. All the bidders are requested to visit the site before quoting the rates. The complete document shall be read and understood in all respect. If any clarification is required, the same may got cleared before submitting their offers in writing by contacting the following person:**

Mr. M.V. Ramaswamy

Head- Civil Engg Section

Ph. No. 080-2254 1207

Mobile 9742410480

E-mail.: mramaswamy@iiap.res.in

INDIAN INSTITUTE OF ASTROPHYSICS

2ND BLOCK, KORAMANGALA,

BENGALURU – 560034.

**Name of Work: “Construction of Proposed two and four wheeler parking shed at
CREST Campus, I.I.A, Hosakote.”**

**Tender Notice No.: 44/IIA/CIVIL/PARKING SHED/CREST/HOSAKOTE/2021-22 Dated
26.07.2021**

Name of

The Firm: _____

Address: _____

Phone No: _____

Last date for submission: 27.08.2021 up to 15:00 hrs

FORMAT FOR SUBMISSION OF TECHNICAL & ORGANISATIONAL DETAILS.

NAME OF THE FIRM :

1. OFFICE SET UP OF THE FIRM

1.1 Office Address:

.....
.....

1.2 Year of Establishment:

1.3 Contact Person Shri

With Designation

Ph No.....

Fax No.....

E-mail.....

1.4 Details of registration if any:

.....

1.5 Organizational setup of the firm

Total staff strength both technical

And Administration with their name, age

qualification and experience :

1.6 PAN (photocopy to be enclosed)

GSTIN No (photocopy to be enclosed)

1.7 Details of the staff as per the following format.

Sl. No	Profession/discipline	Name	Age	Qualification	Experience (total years)	Field of experience
	Civil					

2 TENDERER'S EXPERIENCE

Details of Works carried out and on hand during last five years with details such as name of work, year of completion, client name and address, cost of work, time period of construction, nature of work, etc., (It shall enclose a certificate from the owner that the service rendered by the firm has been satisfactory)

Sl. No.	Name & description of work	Value of work and date.	Period of construction and date.	Client persons to whom reference may be made.

3. TOOLS AND EQUIPMENT LIST

The tenderer shall indicate herein below the equipment he has in possession and the equipment he proposes to bring to the site, in case the work is awarded to him.

Sl. No	Type and Description of the equipment.	Numbers the bidder has in possession	Numbers he proposes to bring on to site

Tenderers hereby confirms that the quantity and type of tools he will employ for construction will not be less than those listed above and agree to bring more equipment if so warranted in the opinion of the Engineer-in-charge.

4. FINANCIAL

Bank Name: _____

Branch: _____

Account No.: _____

Average Annual Turnover for last 5 Years: _____

5. INSURANCE

Accident Insurance

Insured with: _____

Policy No.: _____

6. Details of Arbitration cases :

7. Any other detail you would like to intimate in support of your technical bid for appointment :

Signature of the authorized

Person with seal of the firm

(Note: Attach separate sheet for furnishing information in case the space in the format is insufficient)

INDIAN INSTITUTE OF ASTROPHYSICS
2ND BLOCK, KORAMANGALA,
BENGALURU – 560034.

PRICE BID

**Name of Work: “Construction of Proposed two and four wheeler parking shed
at CREST Campus, I.I.A, Hosakote.”**

**Tender Notice No.: 44/IIA/CIVIL/PARKING SHED/CREST/HOSAKOTE/2021-22 Dated
26.07.2021**

Name of

The Firm: _____

Address: _____

Phone No: _____

Last date for submission: 27.08.2021 at 15:00 hrs

**Tender for the “Construction of Proposed two and four wheeler parking shed
at CREST Campus, I.I.A, Hosakote.”**

Conditions of contract.

Sealed item rate tenders are invited by Indian institute of Astrophysics for the above mentioned work

Estimated cost	: Rs 30,50,000.00 (Rs. Thirty lakhs Fifty thousand only).
Time of completion	: 06 (Six) months including all seasons.
Period of commencement	: 7 days from the date of receipt of work order
Retention money/Security Deposit	: 5% to be deducted from each RA bill and final bill, shall be released after one year of completion of work, deducting the cost, if any, towards the cost of defects rectified by employer due to lack of response of the contractor on completion of defects liability period and on certification by the engineer –in charge.
Defects liability period	: 12 Months.
Amount of liquidated damage	: Liquidated Damages will be deducted from the bill amount while making final payment for delay in completion of work if any, as per the extant rules of the CPWD.
Escalation	: In view of the short duration of the contract, no escalation will be paid to the contractor on account of changes in the market prices of any items of work or changes in the cost of living indices etc.
Tax deduction at source	: Statutory taxes will be deducted while making payment from time to time as applicable.

The Director, Indian institute of Astrophysics reserves the right to reject any or all the tenders without assigning any reason whatsoever.

The tenderer shall be responsible for arranging and maintaining at his own cost all **materials, tools and plants, water, electricity, facilities for workers, safety norms** and all other services required for executing the work.

Timely completion of work and quality of workmanship are of prime importance and the work shall be completed within the stipulated period. Cement consumption must match with standard theoretical calculations. Recovery to be effected in the event of not fulfilling the cement consumption. The waterproofing is the main work for which five year performance guarantee need to be provided by the applicator.

I/ We have read the tender notice, specifications, schedule, drawings, general rules and all other contents of the tender conditions, and understand that you are not bound to accept the lowest or any tender you may receive.

I/ we hereby tender for the execution for the work specified above within the time specified above, at the rates specified in the attached bill of quantities and in all respects with these specifications, design, drawings and instructions.

I/we agree that should I/we fail to commence the work specified in the above memorandum an amount equal to amount of earnest money mentioned in the form of invitation of tender shall be absolutely forfeited to the Director.

Dated: -----

Signature of the contractor with stamp

General conditions of contract.

Item rate tender for works.

- ❑ The institute reserves the right to alter the scope /or reduce quantum of work before issue of work order and the contractor shall not have any claim what so ever on this account.

- ❑ Rates quoted by the contractor in item rate tender in figures and words shall be accurately filled in so that there is no discrepancy in the rates written in figures and words. However if a discrepancy is found, the rates which correspond with the words worked out by the contractor shall be taken as correct.

- ❑ If the amount of an item is not worked out properly by the contractor or it does not correspond with the rate written either in figures or words, then the rate quoted by the contractor in the words shall be taken as correct.

- ❑ When the **rates quoted by the contractor in figures and in words** tally but the amount is not worked out correctly the rate quoted in words by the contractor will be taken as correct and not the amount.

- ❑ The contractor shall take all precautionary measures to prevent entry of dust, dirt and noise pollution to the adjacent buildings and keep the premises neat and tidy, remove surplus materials and rubbish and shall not cause inconvenience to the staff of IIA. If the contractor or his working people or servants shall break, deface, injure or destroy any part of a building in which they may be working or any buildings, road, kerbs, fence, enclosure, water pipes cables, drains, electric and telephone posts or wire, trees grass or garden. The cost of any such damage and risks arising out of this shall be entirely borne by the contractor.

- ❑ A bill shall be submitted by the contractor each month on or before the date fixed by the Engineer- in charge. All the measurements of the work may be recorded jointly by the Engineer-in charge and the contractor or their respective representatives. The measurements will be taken at site, as per latest IS code of practice for measurements. All measurements shall be taken with steel tapes only.

- ❑ The Engineer- in -Charge shall have full powers to the removal from the premises of all materials and bad workmanship, which in his opinion are not in accordance with the specifications.

- The Engineer –in- Charge may require the contractor to dismiss or remove from the site of the work any person or persons in the contractors employ upon the work who may be in competent or misconduct himself.

- For working on Sundays, holidays and late hours prior permission will be accorded by the Engineer-in charge on the application made by the contractor.

- All works to be executed under the contract shall be executed under the direction and subject to the approval in all respects of the Engineer-in charge who shall be entitled to direct at what point or points and in what manner they are to be commenced and from time to time carried on.

- The contractor shall treat all materials obtained during dismantling of a structure, excavation of the site for a work etc as institute’s property and such materials shall be disposed off to the best advantage of the institute.

- The contractor shall execute the whole and every part of the work in the most substantial and workman like manner and in strict accordance with the specifications of the CPWD / DOS / Bureau of Indian Standards. In case of any class of work for which there is no such specifications the contractor shall carry out the work in all respects in accordance with the instructions in writing of the Engineer- in charge.

- The Engineer-in charge shall have powers to make any alterations in, omissions from, additions to or substitutions for the original specifications, drawings, designs and instructions that may appear to him necessary or advisable during the progress of the work and the contractor shall carry out the work in accordance. The rates for such additional, altered or substituted items of work shall be worked out in accordance with the standard procedure followed in CPWD / DOS.

- If at any time after the commencement of the work, the Director shall for any reason whatsoever not require the whole thereof as specified in the tender to be carried out, the Engineer- in-Charge shall give notice in writing of the fact to the contractor who shall have no claim to payment of compensation whatsoever on account of any profit or advantage which he might have derived from the execution of the work in full, but which he did not derive in consequence of the full amount of the work not having been carried out, neither shall he have any claim for compensation by reason of any alterations having been made in the original specifications , drawings ,designs and instructions which shall involve any curtailment of the work as originally contemplated.

- ❑ The contractor shall obtain a valid license under the Contract Labour (R&A) act 1970 and the contract labour (Regulation & Abolition) central rules, 1971 before the commencement of the work and continue to have a valid license until the completion of the work. No labour below the age of eighteen years shall be employed on the work. The contractor shall pay to labour employed by him either directly or through sub contractors, wages not less than fair wages as defined in the provision of the contract labour (R&A) act 1970 and the contract labour (R&A) central rules 1971 wherever applicable.

- ❑ The contractor shall at his own expenses arrange for the safety provision as per safety code framed from time to time and shall at his own expenses provide for all facilities in connection therewith.

- ❑ The contractor shall comply with all the provisions of the payment of wages act 1936, Minimum Wages Act 1948, Employees liability act 1938, Workmen's Compensation act 1923, Industrial Disputes Act 1961 and the Contractors Labour (R&A) Act 1970 or the modifications thereof or any other laws relating thereto and the rules made there under from time to time. The regulations aforesaid shall be deemed to be a part of this contract and any breach thereof shall be deemed to be a breach of this contract. Security deposit will not be refunded till clearance certificate from Labour Officer is obtained by contractor.

- ❑ The contractor shall make his /their own arrangements for water required for the works and nothing extra will be paid for the same, as the water available from the institute source may not be sufficient to meet the construction.

- ❑ The contractor shall have all the tools and plants necessary to carry out the work such as concrete mixer, vibrator and hoist. The contractor shall employ one graduate engineer during the execution of the work

- ❑ Certified plumbers should be employed by the contractor on the plumbing and sanitary work.

- ❑ The standard sectional weights referred to as standard tables in para 5.3.4 (table no. 5.4) in CPWD specifications for works 2009 vol. 1 to be considered for conversion of length of various sizes of M.S bars and tor steel bars in to weight.

- ❑ The entire work is to be completed within the period stipulated i.e. **6 (six) months** from the 7th day of issue of Letter of Intent/Work Order. The period includes monsoon period also. Time shall be the essence of the contract. After the work awarded, the contractors shall furnish detailed time schedules for the approval of the Engineer-in charge which after approval shall form part of the contract and are to be strictly adhere to.

- ❑ The maintenance period for the work shall be twelve (12) months and any defects noticed during the period shall have to be rectified by contractor at his cost, failing which the action taken for maintenance Engineer-in charge shall be final over which the contractor will not have any claim.

- ❑ The contractor shall extend all co-operations to the contractors executing works such as electrical, air conditioning etc who might be working at the site and shall permit to use scaffolding etc already put up by him.
- ❑ The Engineer-in charge will have the right to get any item of the work included in this tender or not executed through other agencies. Schedule of probable quantities in respect of the work and specifications are enclosed. The schedules of probable quantities are liable to alterations by emission, deduction or additions at the discretion of the Engineer-in charge.
- ❑ The rates quoted by the tenderer in the schedule shall be inclusive of all taxes and levies. Such rates should provide the break-up of the cost and applicable taxes, levies etc.
- ❑ Samples of all materials to be incorporated in the works shall be submitted to the Engineer-in charge for his approval without claiming any extra cost. Materials not confirming strictly to the samples are liable to be rejected.
- ❑ The employment of any sub-contractors will be subjected to the approval of the Engineer-in-charge. If at any time during the progress of the work the Engineer-in charge determines that any sub-contractor is incompetent or undesirable the contractor shall take steps immediately to cancel such sub-contractor. The contractor shall be entirely responsible for all the work included in the contract whether executed by him or through his sub-contractors. In particular it may be noted that the contractor shall obtain steel doors and windows from a reputed manufacturer and before placing order for these, the contractor shall obtain the concurrence of the department for the agency from whom he proposes to obtain steel doors and windows.
- ❑ The contractor shall prepare a CPM / PERT /BAR chart/ detailed estimate programme within a week's time of issue of Work Order.
- ❑ All materials and articles brought by the contractor to the work site shall have to be declared at the security gate. Similarly no materials shall be taken out from the departmental premises without proper gate pass which will be issued by the Engineer-in charge.
- ❑ Unless otherwise provided in the schedule of quantities the rates tendered by the contractor shall be all inclusive and shall apply to all heights, lifts, leads and depths of the building and nothing extra shall be payable to him on this account.
- ❑ Sample of various materials required for testing shall be provided free of charge by the contractor. Testing charges, if any unless otherwise provided, shall be borne by the department. All other expenditure required to be incurred for taking the samples, conveyance, packing etc. shall be borne by contractor himself. In case of concrete and reinforced concrete work, the contractor shall be required to make arrangement for carrying out compression strength tests at his own cost including preparation of cubes curing etc. complete.
- ❑ For the purpose of recording measurements and preparing running account bills, the abbreviated nomenclature shall be accepted along with the item number.

- The contractor shall along the tender submit a schedule of machinery to be used on the work in support of his assurance to adhere to the time schedule specified in the proform given.

- I /We declare that the work will be carried out as per the specifications in tender document and as per the specifications said above. The items of work not covered in the specifications said above will be carried out as per the specifications in the relevant CPWD specifications, and if not covered in CPWD specifications the work will be carried out as in the relevant IS specifications, and if not covered in the any of the above, the work will be carried out as directed in writing by the Engineer- in charge.

- I / We declare that the rates quoted by me/us are on the basis of the above.

Dated: -----

Signature of the contractor with stamp

TENDER FORM

To,

The Director,
Indian institute of Astrophysics,
Koramangala,
Bengaluru - 560034

Dear Sir,

**Sub: Tender for project: “Construction of Proposed two and four wheeler parking shed at CREST
Campus, I.I.A, Hosakote.”**

With reference to the tender invited by you for the above proposed work, I /we write this after having:

- a). Examined the designs, drawings, detailed specifications to tenders, sample agreement, the general conditions of contract and special conditions of contract annexed there to (here in after called ‘the contract documents’) relating to construction.
- b). Visited and examined the site of the proposed work and acquired the requisite information relating to or affecting the tender. We are agreed to the decisions of the pre bid meeting by signing and stamping the minutes of the meeting which is enclosed along with this tender.

I/We undersigned hereby offer to construct the proposed work in strict accordance with the contract document for the consideration to be calculated in terms of the priced schedule of quantities.

I/We undertake to complete the whole of the works as per the attached schedule from the date of issue of intimation by you that our tender has been accepted and up on being permitted to enter site. I/We further undertake that on failure, subject to the conditions of contract relating to extension of time, I/We shall be agreed ‘Liquidated damages’ for the period during which the work shall remain incomplete.

I/We hereby deposit with you as earnest money **Rs.....(RUPEES
.....ONLY)** [Carrying no interest]
and I/We fail to take up the contract when called up on to do so.

Our Bankers are

1.

2.

Place:

Date:

Signature of the tenderer
Name of the partners of the firm
Or
Name of the person having power of attorney to sign the contract

SPECIAL CONDITIONS

GENERAL:

SPECIAL CONDITIONS OF CONTRACT shall be read in conjunction with GENERAL CONDITIONS OF CONTRACT and both form an integral part of contract. Where the two are at variance, the conditions stipulated in this as SPECIAL CONDITIONS shall supersede relevant GENERAL CONDITIONS.

1. SPECIAL CONDITIONS:

HELMETS :

As a measure of safety, persons employed on the site, Engineers and Supervisors shall wear a helmet of approved make at all times when they are at the site. No visitors shall be allowed on work site without wearing helmet.

Contractors shall make arrangements to provide safety helmets to all the persons employed on the site, Engineers and Supervisors at his cost.

Contractors shall display safety and warning signs at strategic locations at the site.

CHILD LABOUR:

Contractor or his Sub-contractor shall not employ any child labourers on the work site, either permanently or temporarily. It shall be the responsibility of the main Contractor to make sure that no child labour is employed at the site. Contractor shall indemnify the Employer against any consequences statutory or otherwise, that may arise out of employing child labour on the site.

TEMPORARY ELECTRICAL WIRING:

It shall be the responsibility of the main Contractor to make sure that the temporary wiring for construction activity shall adhere to minimum safety precautions as per Electricity Act. All wires / cables shall be drawn on wooden poles properly fixed and shall be drawn overhead.

2. LABOUR SHEDS:

Labour sheds shall be constructed with non-combustible materials like GI sheets or Asbestos sheets. Contractor will not be permitted to use combustible materials such as palm leaves etc., for the construction of the labour sheds.

3. MATERIALS SUPPLY / PROCUREMENT:

No materials will be supplied by the owner. If any increase on the material procurement cost/ labour, P&M will not be entertained for any kind of escalation till completion of the project.

4. BILLING, CERTIFICATION & PAYMENT OF BILLS:

BILLING:

The contractor shall prepare measured bills after completing the quantum of work as per the standard format and submit the same to the Institute for checking and issue of Certificates for Payment. A proper tax invoice (with breakup of the cost and taxes) shall be submitted and bill shall be settled within 30 days of receipt at IIA. Running account bills shall be prepared and submitted and payment is subject to consideration of the engineer in Charge/IIA.

PAYMENT OF BILLS:

The contractor shall be paid by the Employer from time to time based on the certificate for payment

5. REPAIR OF WORKS DONE BY OTHER AGENCIES:

The civil contractor shall make up any deficiency in the finishing of the areas damaged by other agencies in a workmanlike manner to achieve uniform finishing of the building at no extra cost.

6. MATERIAL TESTS:

The contractor shall provide such assistance, instruments, machines, labour and materials as are normally required for examining, measuring and testing.

The contractor shall install a compression testing machine at site to test concrete cubes and solid blocks.

The contractor shall maintain a record of all the test results in an approved format and periodically submit the same for Architect's/Employer's scrutiny.

7. PLANT & MACHINERY:

The contractor is obliged to furnish to the Employer detailed list of equipment, plant, machinery & personnel proposed to be deployed in this project.

8. CLIENT'S & ARCHITECT'S OFFICES & FACILITIES:

The contractor shall supply, erect and satisfactorily maintain in good repair until final completion of works, a well lighted temporary site office.

The contractor shall provide at all times for the duration of the contract survey instruments for the exclusive use of consultants as directed by consultants for carrying out of his duties in connection with the contract.

Such instruments which must be approved by the Architect, shall include but not limited to the following:

- One theodolite & tripod capable of reading to 20 seconds
- One level with horizontal circle and tripod.
- Two metric leveling staffs not less than 3.5mtr high.
- One 100 metre rustless steel band, one 30 metre rustless steel tape and two 30 metre linen tapes.

- An adequate number of ranging rods drop arrows, wooden setting-out pegs, etc.

The contractor shall be solely responsible for all such instruments and equipment's and shall ensure that they are at all times in good repair and adjustment.

9. SANITATION & DRAINAGE DURING CONSTRUCTION:

The contractor shall provide sanitation and drainage facilities on the site as stated subsequently.

The contractor shall strictly control the labour so that the site is not polluted, made dirty or littered with debris, wastes or the likes. Any person found creating mess or litter or pollution shall be removed from the site immediately at contractor's cost.

The contractor shall provide sanitation facilities at convenient locations on site to preserve the cleanliness of the site. The effluent shall be directed as follows:

- Waste water : Collection and pumping out and disposal off the site in approved manner.
- Sewage : Septic tank provision - sludge to be collected and disposed off at intervals as directed.

The location of the above provisions shall be as marked on the site mobilization scheme drawing.

10. DISCREPANCIES:

The contractor shall bring to the notice of the Architect any discrepancies within or between contract drawings and/or the other contract documents prior to preparation of working drawings and commencement of work and shall not proceed with work until the Architect gives clarifications and instructions to proceed.

11. REPORTS BY CONTRACTOR:

- 11.1 The contractor shall file daily category-wise labour return. The report shall indicate scheduled requirement against actual strength.
- 11.2 The contractor shall prepare weekly reports of planned and actual progress of work and subsequent week's scheduled work. These will also include material procurement status. These reports shall be submitted to Architect and shall be reviewed during weekly co-ordination meeting.
- 11.3 The contractor shall submit monthly report along with monthly bills.
- 11.4 Further progress charts and schedules shall be prepared by the contractor as directed by the Architect.
- 11.5 The contractor shall submit re-conciliation statement of all the materials supplied by the Client, if any, along with every running & final bill.

12. **FORCE MAJEURE :**

If the work(s) be delayed by:-

- (i) force majeure, or
- (ii) abnormally bad weather,
- or (iii) serious loss or damage by fire, or
- (iv) civil commotion, local commotion of workmen, strike or lockout, affecting any of the trades employed on the work, or
- (v) delay on the part of other contractors or tradesmen engaged by Engineer- in-Charge in executing work not forming part of the Contract, or
- (vi) non-availability of stores, which are the responsibility of Government to supply or (vii) non-availability or break down of tools and Plant to be supplied or supplied by Government or
- (viii) any other cause which, in the absolute discretion of the Engineer-in- Charge is beyond the Contractor's control.

then upon the happening of any such event causing delay, the Contractor shall immediately give notice thereof in writing to the authority as indicated in Schedule but shall nevertheless use constantly his best endeavours to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Engineer-in-Charge to proceed with the works.

13. **Guarantee:**

All the structures fabricated shall be guaranteed against any manufacturing defects for a period of 12 months from the date of acceptance at SHAR. For defects noticed during the guarantee period, replacement rectification should be arranged at free of cost within a reasonable period of such notification.

14. **PERFORMANCE GUARANTEE:**

To ensure due performance of the contract, performance security or Performance Bank Guarantee (PBG) is to be obtained from the successful bidder awarded the contract. Performance security should be for an amount of three (3) percent of the value of the contract or as per the prevailing notification on the date of work order.

In works contract it is usual to take three percent of contract value Performance Security. Performance security may be furnished in the form of an account payee demand draft, fixed deposit receipt from a commercial bank, bank guarantee issued/ confirmed from any of the commercial bank in India or online payment in an acceptable form, safeguarding the client's interest in all respects.

Performance Security is to be furnished by a specified date generally 21 (twenty-

one) days after notification of the award and it should remain valid for a period of 60 (sixty) days beyond the date of completion of all contractual obligations of the contractor, including Defect Liability Period (DLP).

The performance security will be forfeited and credited to the procuring entity's account in the event of a breach of contract by the contractor. It should be refunded to the contractor without interest, after he duly performs and completes all obligations under the contract but not later than 365 days of completion of the Defect Liability Period (DLP). Return of Bid/ Performance Securities should be monitored and delays should be avoided. If feasible, so as to make the process transparent and visible.

15. **ARBITRATION:**

All disputes or differences which may arise between the IIA and the contractor, with regard to the meaning or interpretation or matter or things done or to be done in pursuance thereof, shall be resolved as per the Indian Arbitration Act 1996 by the Sole Arbitrator. The Director IIA is the sole arbitrator and his decision shall be final and binding on both the parties.

In case any dispute or difference shall arise between the IIA and the contractor either during the progress or after the completion or abandonment of the works as to the construction of this contract or as to any matter or thing of whatsoever nature arising there under or in connection therewith, then such dispute or difference shall be and is hereby referred to the Arbitration of a common Arbitrator, if agreed upon or otherwise to two Arbitrators one to be appointed by each party to the dispute and the Arbitration shall be governed by the Arbitration Act, for the time being in force.

TECHNICAL SPECIFICATION FOR THE STRUCTURAL STEEL WORK

1.1 STRUCTURAL STEEL WORK

1.1.1 This specification covers the fabrication and transportation to site and erection on prepared foundations and structural steel work consisting of beams, columns, vertical trusses, bracings, shear connections etc.

1.1.2 Fabrication, erection and approval of steel structures shall be in compliance with :

- These General Specifications and IS : 800 - 1984
- Drawings and supplementary drawings to be supplied to the contractors during execution of the work.

1.1.3 Providing primer coat for steel structures. Grouting of holding-down bolt pockets and below base plates where required.

1.1.4 In case of conflict between the Clauses mentioned here and the Indian Standards, those expressed in this specification shall govern.

1.1.5 Applicable Codes & Standards

S No	Code	Description
1	IS:806	Dimensions for Hot Rolled Steel sections
2	IS:2062	Steel for general structural purposes
3	IS:3502	Steel Chequered plate
4	IS:1363	Black Hexagonal Bolts, Nuts and Lock Nuts (diameter 6 to 39 mm) and Black Hexagonal Screws (diameter 6 to 24 mm).
5	IS:1367	Technical Supply Conditions for Threaded Fasteners.
6	IS: 2016	Plain Washers
7	IS: 814	Covered Electrodes for Metal Arc welding of Structural Steels.
8	IS: 6639.	Hexagon bolts for steel structures
9	IS: 3757	High strength friction grip bolts
10	IS 1239	Mild steel tubes, tubular and other wrought steel fittings
11	IS: 5372	Taper washers for channels.
12	IS: 6610	Heavy washers for steel structures.

1.2 Scope

1.2.1 The fabrication and erection of the steel work consists of accomplishing of all jobs here-in enumerated including providing all labour, tools and plant all materials and consumables such as welding electrodes, bolts and nuts, oxygen and acetylene gases, oils for cleaning etc. of approved quality as per relevant IS. The work shall be executed according to the drawings, specifications, relevant codes etc. in an expeditious and workman like manner, as detailed in the specifications and the relevant Indian Standard Codes and Standard Practice and to the complete satisfaction of the I.I.A Engineer In charge.

1.3 Fabrication Drawings

1.3.1 The contractor shall prepare all fabrication and erection drawings on the basis of design drawings supplied to him and submit the same in triplicate to the I.I.A Engineer In charge for review, I.I.A Engineer In charge shall review and comment, if any, on the same. Such review,

if any, by the I.I.A Engineer In charge, does not relieve the contractor of any of his required guarantees responsibilities. The contractor shall however be responsible to fabricate the structural's strictly conforming to specifications and reviewed drawings.

1.3.2 Fabrication drawings shall include the following :

- Member sizes and details
- Types and dimensions of welds and bolts
- Shapes and sizes of edge preparation for welding
- Details of shop and field joints included in assemblies.

Bill of material

- Quality of structural steels, welding electrodes, bolts, nuts and washers etc. to be used.
- Erection assemblies, identifying all transportable parts and sub-assemblies, associated with special erection instructions, if required.
- Calculations where asked for, for approval.

1.3.3 Connections, splices etc. other details not specifically detailed in design drawings shall be suitably given on fabrication drawings considering normal detailing practices and developing full member strengths. Where asked for calculations for the merit shall also be submitted for approval.

1.3.4 Any alternate design or change in section is allowed when approved in writing by the I.I.A Engineer In charge.

1.3.5 However if any variation in the scheme is found necessary later, the contractor will be supplied with revised drawings. The contractor shall incorporate these changes in his drawings at no extra cost and resubmit for review.

1.3.6 I.I.A Engineer In charge review shall not absolve the contractor of his responsibility for the correctness of dimensions, adequacy of details and connections. One copy will be returned reviewed with or without comments to the contractor for necessary action. In the former case further three copies of amended drawings shall be submitted by the contractor for final review.

1.3.7 The contractor shall supply three prints each of the final reviewed drawings to the I.I.A Engineer In charge within a week since final review, at no extra cost for reference and records.

1.3.8 The I.I.A Engineer In charge will verify the correct interpretation of their requirements.

1.3.1 If any modification is made in the design drawing during the course of execution of the job, revised design drawings will be issued to the contractor. Further changes arising out of these shall be incorporated by the contractor in the fabrication drawings already prepared at no extra cost and the revised fabrication drawings shall be duly got reviewed as per the above Clauses.

1.4 Materials

1.4.1 Rolled Sections

The following grades of steel shall be used for steel structures :

Structural steel will generally be of standard quality conforming to IS: 226. Whenever welded construction is specified plates of more than 20 mm thickness will generally conform to IS: 2062.

1.4.2 Welding Materials

Welding electrodes shall conform to IS: 814.

Approval of welding procedures shall be as per IS: 823.

1.4.3 Bolts, Nuts & Washers

Bolts and nuts shall be as per IS: 1367 and tested as per IS:1606. It shall have a minimum tensile strength of 44 Kg/mm² and minimum elongation of 23% on a gauge length of 5.65 (A-Original cross sectional area of the gauge length). Washers shall be as per IS: 2016.

1.4.4 All materials shall conform to their respective specifications. The use of equivalent or higher grade or alternate materials will be considered only in very special cases subject to the approval of the I.I.A Engineer In charge in writing.

1.4.5 Receipt & Storing of Materials

Steel materials supplied by the contractor must be marked for identification and each lot should be accompanied by manufacturer's quality certificate, conforming chemical analysis and mechanical characteristics.

All steel parts furnished by supplier shall be checked, sorted out, straightened, and arranged by grades and qualities in stores.

Structural's with surface defects such as pitting, cracks, laminations etc. shall be rejected if the defects exceed the allowable tolerances specified in relevant standards or as directed by the I.I.A Engineer In charge.

Welding wire and electrodes shall be stored separately by qualities and lots inside a dry and enclosed room, in compliance with IS: 816 - 1969 and as per instructions given by the I.I.A Engineer In charge. Electrodes shall be perfectly dry and drawn from an electrode even, if required.

Checking of quality bolts of any kind as well as storage of same shall be made conforming to relevant standards.

Each lot of electrodes, bolts, nuts, etc. shall be accompanied by manufacturer's test certificate.

The contractor may use alternative materials as compared to design specification only with the written approval of the I.I.A Engineer In charge.

1.4.6 Material Tests

The contractor shall be required to produce manufacturer's quality certificates for the materials supplied by the contractor. Notwithstanding the manufacturer's certificates, the I.I.A Engineer In charge may ask for testing of materials in approved test houses. The test results shall satisfy the requirements of the relevant Indian Standards.

Whenever quality certificates are missing or incomplete or when material quality differs from standard specifications the contractor shall conduct all appropriate tests as directed by the I.I.A Engineer In charge at no extra cost.

Materials for which test certificates are not available or for which test results do not tally with relevant standard specifications, shall not be used.

1.5 Fabrication

Fabrication shall be in accordance with IS: 800 Section V in addition to the following :

Fabrication shall be done as per approved fabrication drawings adhering strictly to work

points and work lines on the same. The connections shall be welded or bolted as per design drawings. Work shall also include fabricating built up sections.

Any defective material used shall be replaced by the contractor at his own expense, care being taken to prevent any damage to the structure during removal.

All the fabricated and delivered items shall be suitably packed to be protected from any damage during transportation and handling. Any damage caused at any time shall be made good by the Contractor at his own cost.

Any faulty fabrication pointed out at any stage of work shall be made good by the contractor at his own cost.

1.5.1 Preparation of Materials

Prior to release for fabrication, all rolled sections warped beyond allowable limit shall be pressed or rolled straight and freed from twists, taking care that an uniform pressure is applied.

Minor warping, corrugations etc. in rolled sections shall be rectified by cold working. The sections shall be straightened by hot working where the so direct and shall cooled slowly after straightening.

Warped members like plates and flats may be used as such only if wave like deformation does not exceed $L/1000$ but limited to 10 mm (L-Length).

Surface of members that are to be jointed by lap or fillet welding or bolting shall be even so that there is no gap between overlapping surfaces.

1.5.2 Marking

Marking of members shall be made on horizontal pads, of an appropriate racks or supports in order to ensure horizontal and straight placement of such members. Marking accuracy shall be at least + 1 mm.

1.5.3 Cutting

Members shall be cut mechanically (by saw or shear or by oxyacetylene flame).

All sharp, rough, or broken edges, and all edges of joints which are subjected to tensile or oscillating stresses, shall be ground.

No electric metal arc cutting shall be allowed.

All edges cut by oxyacetylene process shall be cleaned of impurities prior to assembly.

Cutting tolerances shall be as follows :

- a) For members connected at both ends + 1 mm.
- b) Elsewhere + 3 mm.

The edge preparation for welding of members more than 12 mm thick shall be done by flame cutting and grinding. Cut faces shall not have cracks or be rough.

Edge preparation shall be as per IS : 823 - 1964.

1.5.4 Drilling

Bolts holes shall be drilled.

Drilling shall be made to the diameter specified in drawings.

No enlarging of holes filling, by man drilling or oxyacetylene flame shall be allowed.

Allowed variations for holes (out-of-roundness, eccentricity, plumb-line deviation) shall be as per IS:800.

- Maximum deviation for spacing of two holes on the same axis shall be + 1 mm.
- Two perpendicular diameters of any oval hole shall not differ by more than 1 mm.

Drilling faults in holes may be rectified by reaming the holes to the next upper diameter, provided that spacing of new hole centers and distance of hole centres to the edges of members are not less than allowed and that the increase of hole diameter does not impair the structural strength. Hole reaming shall be allowed if the number of faulty holes does not exceed 15% of the total number of holes for one joint.

1.5.6 Preparation of Members for Welding

Assembly of structural members shall be made with proper jigs and fixtures to ensure correct positioning of members (angles, axes nodes etc.)

Sharp edges, rust of cut edges, notches, irregularities and fissures due to faulty cutting shall be chipped or ground or filled over the length of the affected area, deep enough to remove faults completely.

Edge preparation for welding shall be carefully and accurately made so as to facilitate a good joint.

Generally no special edge preparation shall be required for members under 8 mm thick.

Edge preparation (beveling) denotes cutting of the same so as to result in V, X K or U seam shapes as per IS: 823.

The members to be assembled shall be clean and dry on the welding edges. Under no circumstances shall wet, greasy, rust or dirt covered parts be assembled. Joints shall be kept free from any foreign matter likely to get in to the gaps between members to be welded.

Before assembly the edges to be welded as well as adjacent areas extending for at least 20 mm shall be cleaned (until metallic polish is achieved).

When assembling members, proper care shall be taken of welding shrinkage and distortions, as the drawing dimensions cover finished dimensions of the structure.

The elements shall be got checked and approved by the I.I.A Engineer In charge or their authorized representative before assembly.

The permissible tolerances for assembly of members preparatory to welding shall be as per IS: 823-1964.

After the assemble has been checked, temporary tack welding in position shall be done by electric welding, keeping in view finished dimensions of the structure.

1.5.7 Welding procedures

Welding shall be carried out only by fully trained and experienced welders as tested and

approved by the I.I.A Engineer In charge. Any test carried out either by the I.I.A Engineer In charge of their representative or the inspectors shall constitute a right by them for such tests and the cost involved thereon shall be borne by the contractor himself.

Qualification tests for welders as well as tests for approval of electrodes will be carried out as per IS: 823. The nature of test for performance qualification of welders shall be commensurate with the quality of welding required on this job as judged by the I.I.A Engineer In charge.

The steel structures shall be automatically, semi-automatically or manually welded.

Welding shall begin only after the checks mentioned in Clause 5.1 to 5.6 have been carried out.

The welder shall mark with his identification mark on each element welded by him. When welding is carried out in open air, steps shall be taken to protect the face of welding against wind or rain. The electrodes, wire and parts being welded shall be dry.

Before beginning the welding operation, each joint shall be checked to ensure that the parts to be welded are clean and root gaps provided as per IS: 823.

For continuing the welding of seems discontinued due to some reason, the end of the discontinued seem shall be melted in order to obtain a good continuity. Before resuming the welding operation, the groove as well as the adjacent parts shall be well cleaned for a length of approx. 50 mm.

For single butt welds (in V, 1/2 V or U) and double butt welds (in K, double U etc.) the rewelding of the root is mandatory but only the metal deposit on the root has been cleaned by back gouging or chipping.

The welding seams shall be left to cool slowly. The contractor shall not be allowed to cool the welds quickly by any other method.

For multi-layer welding, before welding the following layer, the formerly welded layer shall be cleaned metal bright by light chipping and wire brushing. Backing strips shall not be allowed.

The order and method of welding shall be so that -

- No unacceptable deformation appears in the welded parts.
- Due margin is provided to compensate for contraction due to welding in order to avoid any high permanent stresses.

The defects in welds must be rectified according to IS: 823 and as per instruction of I.I.A Engineer In charge.

1.5.8 Weld Inspection

The weld seams shall satisfy the following :

- shall correspond to design shapes and dimensions.
- shall not have any defects such as cracks, incomplete penetration and fusion, under-cuts, rough surfaces, burns, blow holes and porosity etc. beyond permissible limits.

During the welding operation and approval of finished elements, inspections and tests shall be made as shown in annexure-B.

The mechanical characteristics of the welded joints shall be as in IS: 823.

1.5.1 Preparation of Members for Bolting

The members shall be assembled for bolting with proper jigs and fixtures to sustain the assemblies without deformation and bending.

Before assembly, all sharp edges, shavings, rust dirt, etc. shall be removed.

Before assembly, the contacting surfaces of the members shall be cleaned and given a coat of primer as per IS: 2074.

The members which are bolt assembled shall be set according to drawings and temporarily fastened with erection bolts (minimum 4 pieces) to check the coaxiality of the holes.

The members shall be finally bolted after the deviations have been corrected, after which there shall not be gaps.

Before assembly, the members shall be checked and got approved by the I.I.A Engineer In charge.

The difference in thickness of the sections that are butt assembled shall not be more than 3% or maximum 0.8 mm whichever is less. If the difference is larger, it shall be corrected by grinding or filling.

Reaming of holes to final diameter or cleaning of these shall be done only after the parts have been check assembled.

As each hole is finished to final dimensions (reamed if necessary) it shall be set and bolted up. Erection bolts shall not be removed before other bolts are set.

1.5.10 Bolting up

Final bolting of the members shall be done after the defects have been rectified and approval of joints obtained.

The bolts shall be tightened starting from the centre of joint towards the edge.

1.5.11 Planning of Ends

Planning of ends of members like column ends shall be done by grinding when so specified in the design.

Planning of butt welded members shall be done after these have been assembled, the spare edges shall be removed with grinding machines or files.

The following tolerances shall be permitted on member that have been planed.

- On the length of the member having both ends planed, maximum + 2 mm with respect to design.
- Level differences of planed surfaces, maximum 0.3 mm.
- Deviation between planed surface and member's axis maximum 1/1500.

1.5.12 Holes for Field Joints

Holes for field joints shall be drilled in the shop to final diameters and tested in the shop, with trial assemblies.

When three-dimensional assembly is not possible in the shop, the holes for field joints may be

drilled in shop and reamed on site after erection, on approval by the I.I.A Engineer In charge.

For bolted steel structures, trial assembly in shop is mandatory.

The tolerance for spacing of holes shall be + 1 mm.

1.5.13 Tolerances

All tolerances regarding dimensions, geometrical shapes and sections of steel structures, shall be as per Annexure B, if not specified in the drawing.

1.5.14 Marking for Identification

All elements and members prior to dispatch for erection shall be shop marked.

The members shall be visibly marked with a weather proof light colored paint. The size and thickness of the numbers shall be chosen as to facilitate the identification of members.

For the small members that are delivered in bundles or crates, the required marking shall be done on small metal tags securely tied to the bundle, while the crates shall be marked directly.

Each bundle or crate shall be packed with members for one and the same assembly; in the same bundle or crate, general utility members such as bolts, quests etc. may be packed.

All bill of materials showing weight, quality and dimension of contents shall be placed in the crates.

The members shall be marked with a durable paint, in a visible location, preferably at one end of the member so that these may be easily checked during storage and erection.

All members shall be marked in the shop before inspection and acceptance.

When the member is being painted, the marking area shall not be painted but bordered with white paint.

The marking and job symbol shall be registered in all shop delivery documents (transportation, for erection etc.)

1.5.15 Shop Test Pre-assembly

For steel structures that have the same type of welding the shop test pre-assembly shall be performed on one out of every 10 members minimum.

For bolted steel structures, shop test pre-assembly is mandatory for all elements as well as for the entire structure in conformity with Clause 5.12.

1.6 Shop Inspection and Approval

1.6.1 General

The I.I.A Engineer In charge or their representative shall have free access at all responsible times to the contractors fabrication shop and shall be afforded all reasonable facilities for satisfying himself that the fabrication is being undertaken in accordance with drawings and specifications.

Technical approval of the steel structure in the shop by the I.I.A Engineer In charge is mandatory.

The contractor shall not limit the number and kinds of tests, final as well as intermediate once, or extra tests required by the I.I.A Engineer In charge.

The contractor shall furnish necessary tools, gauges, instruments etc. and technical non-technical personnel for shop tests by the I.I.A Engineer In charge, free of cost.

1.6.2 Shop Acceptance

The I.I.A Engineer In charge shall inspect and approve at the following stages :

The following approvals may given in shop :

- Intermediate approvals of work that cannot be inspected later.
- Partial approvals
- Final approvals

Intermediate approval of work shall be given when a part of the work is preformed later :

- Cannot be inspected later
- Inspection would be difficult to perform and results would not be satisfactory.

Partial approval in the shop is given on members and assemblies of steel structures before the primer coat is applied and includes :

- Approval of materials
- Approval of field joints
- Approval of parts with planed surfaces
- Test erection
- Approval of members
- Approval of markings
- Inspections and approvals of special features, like Rollers, loading platform mechanism etc.

During the partial approval, intermediate approvals as well as all former approvals, shall be taken in to consideration.

1.6.3 Final approval in the Shop

The final approval refers to all elements and assemblies of the steel structures, with shop primer coat, ready for delivery from shop to be loaded for transportation, or stored.

The final approval comprises of :

- Partial approvals
- Approval of shop primer coat
- Approval of mode of loading and transport
- Approval of storage (for materials stored)

1.7 Painting and Delivery

1.7.1 Preparation of parts for shop painting

Painting shall consist of providing one coat of red oxide zinc chromate primer to steel members before dispatch from shop.

Primer coat shall not be applied unless :

- Surface have been wire brushed, cleaned of dust, oil, rust etc.
- Erection gaps between members, spots that cannot be painted or where moisture or other aggressive agents may penetrate, have been filled with an approved type of oil and putty.
- The surface to be painted are completely dry.
- The parts where water of aggressive agents may collect (during transportation, storage, erection and operation) are filled with putty and provided with holes for drainage of water.
- Members and parts have been inspected and accepted
- Welds have been accepted.

The following are not to be painted or protected by any other product :

- Surface which are in the vicinity of joints to be welded at site.
- Surfaces bearing markings
- Other surfaces indicated in the design.

The following shall be given a coat of hot oil or any approved resistant lubricant only.

- Planed surfaces
- Holes for links

The surfaces that are to be embedded or in contact with the concrete shall be given a coat of cement wash.

The surfaces which are in contact with the ground, gravel or brick work and subject to moisture, shall be given bituminous coat.

The other surfaces shall be given a primer coating.

Special attention shall be given to locations not easily accessible, where water can collect and which after assembly and erection cannot be inspected, painted and maintained. Holes shall be provided for water drainage and in accessible box type sections shall be hermetically sealed by welds.

If specified elsewhere, in the schedule of quantities, the contractor shall paint further coats of red-oxide after erection and placing in position of the steel structures.

1.7.2 Packing, transportation, delivery

After final shop acceptance and marking, the item shall be packed and loaded for transportation.

Packing must be adequate to protect item against warping during loading and unloading.

Proper lifting devices shall be used for loading, in order to protect items against warping.

Slender projecting parts shall be braced with additional steel bars, before loading, for protection against warping during transportation.

Loading and transportation shall be done in compliance with transportation rules.

If certain parts cannot be transported in the lengths stipulated in the design, the position and

type of additional splice joints shall be approved by the I.I.A Engineer In charge.

Items must be carefully loaded on platforms of transportation means to prevent warping, bending or falling during transportation.

The small parts such as fish-plates, quests etc. shall be securely tied with wire to their respective parts.

Bolts, nuts and washers shall be packed and transported in crates.

The parts shall be delivered in the order stipulated by the I.I.A Engineer In charge and shall be accompanied by document showing:

- Quality and quantity of structure or members
- Position of member in the structure
- Particulars of structure
- Identification number job symbol.

1.8 Field Erection

1.8.1 The erection work shall be permitted only after the foundation or other structure over which the steel work will be erected is approved and is ready for erection.

1.8.2 The contractor shall satisfy himself about the levels, alignment etc. for the foundations well in advance, before starting the erection. Minor chipping etc. shall be carried out by the contractor on his expense.

1.8.3 Any faulty erection done by the contractor shall be made good at his own cost.

1.8.4 Approval by the I.I.A Engineer In charge or their representatives at any stage of work does not relieve the contractor of any of his required guarantees of the contract.

1.8.5 Storage and preparation of parts prior to erection

The storage place for steel parts shall be prepared in advance and got approved by the I.I.A Engineer In charge before the steel structures start arriving from the shop.

A platform shall be provided by the Contractor near the erection site for preliminary erection work.

The contractor shall make the following verifications upon receipt of material at site.

- for quality certificates regarding materials and workmanship according to these general specifications and drawings.
- Whether parts received are complete without defects due to transportation, loading and unloading and defects, if any, are well within the admissible limit.

For the above work sufficient space must be allotted in the storage area.

Steps shall be taken to prevent warping of items during unloading.

The parts shall be unloaded, stored and stored so as to be easily identified.

The parts shall be stored according to construction symbol and markings so that these may be taken out in order or erection.

The parts shall be at least 150 mm clear from ground on wooden or steel blocks for protection against direct contact with ground and to permit drainage of water.

If rectification of members like straightening etc. are required, these shall be done in a special

place allotted which shall be adequately equipped.

The parts shall be clean when delivered for erection.

1.8.6 Erection & Tolerances

Erection in general shall be carried out as required and approved by the I.I.A Engineer In charge.

Positioning and levelling of the structure, alignment and plumbing of the stanchion and fixing every member of the structure shall be in accordance with the relevant drawings and to the complete satisfaction of the I.I.A Engineer In charge.

The following checks and inspection shall be carried out before during and after erection.

- damage during transportation
- accuracy of alignment of structures
- erection according to drawings and specifications
- progress and workmanship.

In case there be any deviations regarding positions of foundations or anchor bolts, which would lead to erection deviations, shall be informed immediately. Minor rectifications in foundations, orientation of bolts holes etc. shall be carried out as part of the work, at no extra cost.

The various parts of the steel structure shall be so erected so to ensure stability against inherent weight, wind and erection stresses.

The structure shall be anchored and final erection joints completed after plan and elevation positions of the structural members have been verified with corresponding drawings and approved by the I.I.A Engineer In charge.

The bolted joints shall be tightened so that the entire surface of the bolt heads and nuts shall rest on the member. For parts with sloping surfaces tapered washers shall be used.

1.9 Final acceptance and handing over the structure

1.9.1 At acceptance, the contractor shall submit the following documents :

Shop and erection drawings - either in tracings or reproducible.

4 copies of each of the following :

shop acceptance documents

quality certificate for structural's, plates, etc. (electrodes, welding wire, bolts, nuts, washer etc.)

List of certified welders who worked on erection of structures.

acceptance and intermediate control procedure of erection operations.

1.9.2 Approval by the I.I.A Engineer In charge at any stage of work does not relieve the contractor of any of his required guarantees of the contract.

SPECIAL NOTE TO THE BIDDER

1. The bidders are requested to visit the site and to get complete knowledge about the site conditions before quoting the rates. The availability of materials, transportation of materials etc. to be ascertained before quoting the rates.
2. No labour will be allowed to work/stay beyond working hours and during institute holidays. If need to work/stay beyond working hours/on holidays, prior permission from the Engineer in Charge/Scientist in Charge should be obtained in writing.
3. No water and electricity will be supplied by IIA and separate arrangement has to be made by the contractor.
4. Quality and time for completion are the main essence of the contractor and contractor has to keep in mind while quoting the rates.
5. Since the research laboratory is situated in the area, proper care to be taken to avoid disturbance to the staffs. **Works shall be carried out with proper safety and security. Critical Works shall be done with prior information to the authority in view of safety and proper precautions.**
6. All the debris shall be kept in one place as directed by the Engineer in Charge and disposed off outside the campus on working days. Working area/surrounding area shall be kept neat and clean every day after the work is completed.
7. All the materials shall be approved by IIA by providing sample/ mock up before executing the complete work. **The Works shall be carried out with proper guidance from the manufacturer or company representative.**
8. **Proper care to be taken during staging and scaffolding in view of safety.** Good quality staging to be used and workers shall be well experience in use all safety equipments during execution at higher levels.
9. **Please find the check list enclosed in the last page of this tender document and comply accordingly. (No document will be considered without check list compliance)**
10. **The lowest quoted bidder cannot claim as lowest bidder unless the bidder satisfies all the tender conditions, technical qualifications and eligibility with supported documents complete in all respect.**

COVID-19 Guidelines for Construction Workers

IIA is committed for protecting the health and safety of construction workers and workplaces during the COVID-19 pandemic. The contractor is hereby informed to adhere the following steps to reduce risk of spread to the corona virus for construction workers:

- Instruct workers who are sick/ having symptoms to stay away from site.
- Implement physical distancing practices to maintain at least 2 mts between coworkers/contractors/visitors, including while inside work trailers.
- Minimize close discussions at site among workers and visitors (including toolbox talks and safety meetings).
- Provide and have all workers wear face coverings (i.e., cloth face coverings or surgical masks) that have at least two layers of tightly woven breathable fabric, unless their work task requires a respirator. Face coverings should be provided at no cost to workers.
- Continue to use other normal control measures, including personal protective equipment ,necessary to protect workers from other job hazards associated with construction activities.
- Provide and ensure workers use the supplies necessary for good hygiene practices. If workers do not have immediate access to soap and water, use alcohol-based hand sanitizers that contain at least 60 percent ethanol or 70% isopropanol.
- Do not allow workers to share tools and equipment. If sharing cannot be eliminated, clean and disinfect between each use.
- Clean and disinfect portable jobsite toilets and fill hand sanitizer dispensers regularly.
- IIA will take safety measures in view of Covid 19 at main gate by way of thermal scanning and hand sanitization for which all workers should cooperate.

LIST OF APPROVED MATERIALS

CIVIL WORKS

Sl.No.	Material	Make
1	Steel	SAIL – TMT, VIZAG STEEL, JSW
2	Cement	ACC/Birla/L&T/Ultra tech (OPC 43 or 53 GRADE)
3	Waterproofing compound	Fosroc/Dr. fixit/ approved equivalent
4	Acrylic Exterior Emulsion	NEROLAC/ASIAN Paints
5	Plastic Emulsion Paint	NEROLAC/ASIAN Paints
6	Enamel Paint	NEROLAC/ASIAN Paints
7	Aluminium	Jindal, Indal, Hindalco
8	Glass	Saint Gobain, Modi
9	Flush Door	Kutty's Bond Wood, Hunsur Board
10	Vitrified tiles	Nitco/RAK/SOMANY/KAJARIA
11	Ceramic tiles	NITCO/SOMANY/KAJARIA
12	Mineral/Gypsum False ceiling	Armstrong, Saint Gobain (Gyproc)
13	Structural steel	SAIL – TMT, VIZAG STEEL, JSW
14	Galvalume sheet	JSW/TATA

WATER SUPPLY AND SANITARY WORKS

Sl.No.	Material	Make
1	PVC	Astral/Ashirvad/Kisan/Supreme
2	CPVC	Astral/Ashirvad/Supreme/Prince
3	Ball valves	Astral/Ashirvad/Hawa /R.B.
4	SWR Gutter and appurtenances	Kisan Group/ PRINCE/ PARAS Group/ approved equivalent
5	C.P. Fittings	Jaquar/approved equivalent
6	Ceramic accessories	Jaquar/Hindware/CERA
7	SFRC/ RCC SFRC manhole frame and Covers	Southern Concrete Industries/approved equivalent
8	Non return valve (gun metal)	Kohinoor/ Approved Equivalent
9	Anchor bolts/pipe support system	Hilti / approved equivalent

BILL OF QUANTITIES

Bill of Quantities for the work of “Construction of Proposed two and four wheeler parking shed at CREST Campus, I.I.A, Hosakote.”

(NOTE: Rates shall be quoted after reading the complete specifications, special instruction to tenderer and understanding site conditions)

SL NO:	Description of Work	Qty	Unit	Rate (Rs.)		Amount (Rs.)
				Rate in figures (Rs.)	Rate in words (Rs.)	
1	Clearing jungle including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth up to 30 cm measured at a height of 1 m above ground level and removal of rubbish up to a distance of 50 m outside the periphery of the area cleared.	500.00	sqm			
2	Earth work in surface excavation not exceeding 30 cm in depth but exceeding 1.5 m in width as well as 10 sqm on plan including getting out and disposal of excavated earth upto 50 m and lift upto 1.5 m, as directed by Engineer-in- Charge:					
2.1	All kinds of soil	750.00	sqm			
3	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, lift upto 1.5 m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.					
3.1	All kinds of soil.	115.00	cum			

SL NO:	Description of Work	Qty	Unit	Rate (Rs.)		Amount (Rs.)
				Rate in figures (Rs.)	Rate in words (Rs.)	
4	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 upto 1.5 m.	75.00	cum			
5	Excavating, supplying and filling of local earth by mechanical transport upto a lead of 5km also including ramming and watering of the earth in layers not exceeding 20cm in trenches, plinth, sides of foundation etc. complete.	180.00	cum			
6	Disposal of moorum/building rubbish/ malba/ similar unserviceable, dismantled or waste material by mechanical transport including loading, transporting, unloading to approved municipal dumping ground for lead upto 10 km for all lifts, complete as per directions of Engineer-in-charge.	90.00	cum			
7	Random rubble masonry with hard stone in foundation and plinth including levelling up with cement concrete 1:6:12 (1 cement : 6 coarse sand : 12graded stone aggregate 20 mm nominal size) upto plinth level with :					
7.1	Cement mortar 1:6 (1 cement : 6 coarse sand)	22.00	cum			
8	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level in all shapes and sizes in :					
8.1	Cement mortar 1:4 (1 cement : 4 coarse sand)	4.00	cum			

SL NO:	Description of Work	Qty	Unit	Rate (Rs.)		Amount (Rs.)
				Rate in figures (Rs.)	Rate in words (Rs.)	
9	Supplying and stacking at site.					
9.1	Stone screening 11.2 mm nominal size (Type B)	85.00	cum			
10	Laying, spreading and compacting stone aggregate of specified sizes to WBM specifications in uniform thickness, hand picking, rolling with 3 wheeled road/vibratory roller 8-10 tonne capacity in stages to proper grade and camber, applying and brooming requisite type of screening / binding material to fill up interstices of coarse aggregate, watering and compacting to the required density .	85.00	cum			
11	Providing and laying in position Plain cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level :					
11.1	1:2:4 (1 cement : 2 coarse sand (zone-III) : 4 graded stone aggregate 20 mm nominal size)	20.00	cum			
12	Reinforced cement concrete work in walls (any thickness), including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, piers, abutments, posts and struts etc. below and above plinth level up to floor five level, excluding cost of centering, shuttering, finishing and reinforcement :					
12.1	1:1.5:3 (1 cement : 1.5 coarse sand(zone-III) : 3 graded stone aggregate 20 mm nominal size)	50.00	cum			
13	Centering and shuttering including strutting, propping etc. and removal of form for :					

SL NO:	Description of Work	Qty	Unit	Rate (Rs.)		Amount (Rs.)
				Rate in figures (Rs.)	Rate in words (Rs.)	
13.1	Foundations, footings, bases of columns, etc. for mass concrete	15.00	sqm			
13.2	Columns, Pillars, Piers, Abutments, Posts and Struts	25.00	sqm			
13.3	Suspended floors, roofs, landings, balconies and access platform with water proof ply 12 mm thick	20.00	sqm			
14	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete below and above plinth level.					
14.1	Thermo-Mechanically Treated bars of grade Fe-500D or more.	3800.00	Kg			
15	Supply, Fabrication, transportation, delivery at site and erection, installation and alignment of mild steel foundation Anchor bolt of approved size assembly in concrete along with nuts, lock nuts (as per IS:1363, 1364 and IS:3138), washers including welding, cutting, grinding, threading, drilling etc. all complete.	70.00	Kg			
16	Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete.	560.00	kg			
17	Steel work in built up tubular (round, square or rectangular hollow tubes etc.) trusses etc., including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer, including welding and bolted with special shaped washers etc. complete.					

SL NO:	Description of Work	Qty	Unit	Rate (Rs.)		Amount (Rs.)
				Rate in figures (Rs.)	Rate in words (Rs.)	
17.1	Hot finished seamless type tubes	5000.00	kg			
18	20 mm cement plaster of mix :					
18.1	1:4 (1 cement: 4 fine sand)	60.00	sqm			
19	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :					
19.1	Two or more coats on new work	180.00	sqm			
20	Applying priming coat:					
20.1	With ready mixed red oxide zinc chromate primer of approved brand and manufacture on steel galvanised iron/ steel works	180.00	sqm			
21	Providing and fixing pre-coated galvanised iron profile sheets (size, shape and pitch of corrugation as approved by Engineer-in-charge) 0.50 mm (+ 0.05 %) total coated thickness with zinc coating 120 grams per sqm as per IS: 277, in 240 mpa steel grade, 5-7 microns epoxy primer on both side of the sheet and polyester top coat 15-18 microns. Sheet should have protective guard film of 25 microns minimum to avoid scratches during transportation and should be supplied in single length upto 12 metre or as desired by Engineer-in-charge. The sheet shall be fixed using self drilling /self tapping screws of size (5.5x 55 mm) with EPDM seal, complete upto 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.	270.00	sqm			

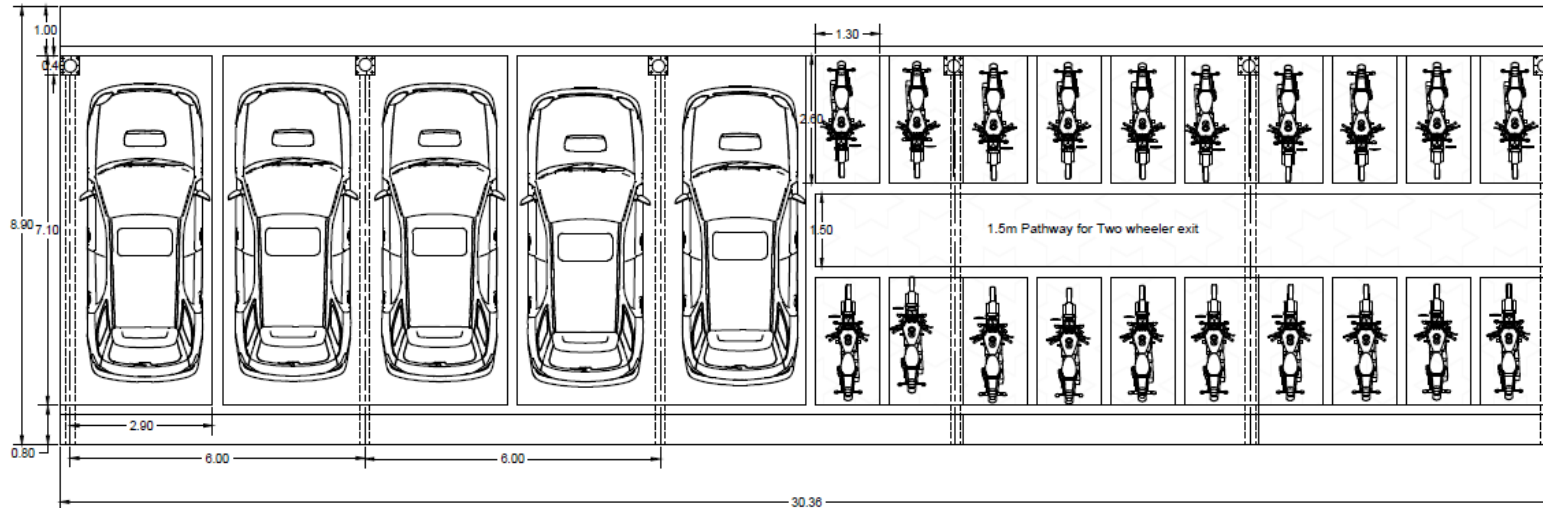
SL NO:	Description of Work	Qty	Unit	Rate (Rs.)		Amount (Rs.)
				Rate in figures (Rs.)	Rate in words (Rs.)	
22	Providing and fixing pre-coated galvanised steel sheet roofing accessories 0.50 mm (+0.05 %) total coated thickness, Zinc coating 120 grams per sqm as per IS: 277, in 240 mpa steel grade, 5-7 microns epoxy primer on both side of the sheet and polyester top coat 15-18 microns using self drilling/ self tapping screws complete :					
22.1	Ridges plain (500 - 600mm)	30.00	metre			
22.2	Flashings/ Aprons.(Upto 600 mm)	10.00	metre			
22.3	Gutter (600 mm over all girth)	44.00	metre			
23	CONCRETE PAVEMENTS : Cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 40 mm nominal size) in pavements, laid to required slope and camber in panels as required including consolidation finishing and tamping complete.	50.00	cum			
24	Painting runway/taxi track/apron marking with adequate nos of coats to give uniform finish with road marking paint of superior make as approved by the Engineer-in-charge, i/c cleaning the surface of ail dirt, scales, oil, grease and other foreign material etc. and lining out complete.					
24.1	New work (Two or more coats)	60.00	sqm			
Sub Total (A)						
GST on (A) % = (B)						
Grand Total (A+B) = (C)						

Grand Total amount in words Rs.....

Date:
Place:

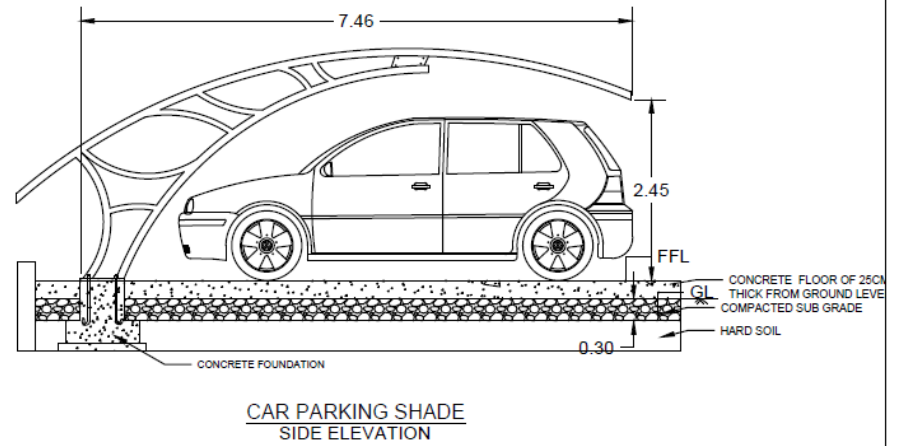
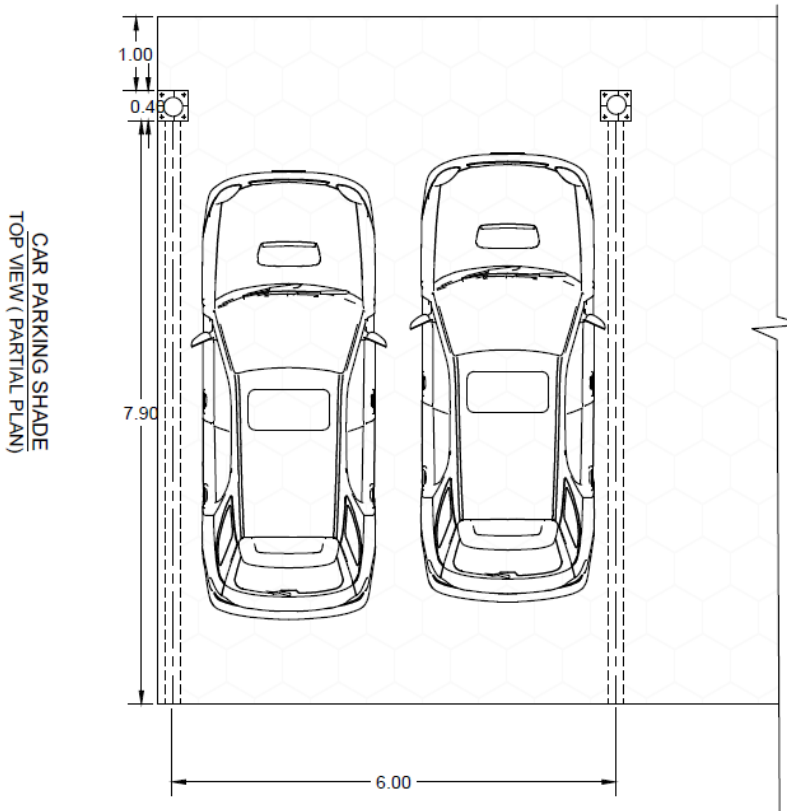
Signature of the contractor with seal

PLAN FOR TWO AND FOUR WHEELER PARKING SHED AT I.I.A CREST CAMPUS HOSAKOTE.



NOTE : These drawings are not the 'Construction Drawings' and details indicated there in are for guidance only and are liable to be modified by the Engineer -In- charge during course of actual construction.

1. size of parking layout - 30m x 9m
2. Number of cars - 5 Nos
3. Number of Two wheeler - 20 Nos
4. Galvalum sheet roofing of approved profile and colour
5. Parking floor is 25cm above existing ground level
6. Parking floor is supported by size stone masonry on all sides with foundation of 30cm depth below ground level



TYPICAL PLAN AND ELEVATION FOR PARKING SHED AT I.I.A CREST CAMPUS HOSAKOTE

NOTE : These drawings are not the 'Construction Drawings' and details indicated there in are for guidance only and are liable to be modified by the Engineer -In- charge during course of actual construction.

CHECK LIST

ALL THE BIDDERS ARE REQUESTED TO COMPLETE THE CHECK LIST WITH NECESSARY DOCUMENTS AND COMPLY ACCORDINGLY

SL. NO.	Document to be furnished	YES/NO	REMARKS
1	Tender document fee (Non Refundable)		
2	Earnest Money Deposit (Refundable)		
3	Complete tender document duly signed by contractor/authorized representative. Power of Attorney to be attached in case of partnership firm)		
4	Please mention the name of the work, tender number, contractor address etc. on cover/envelop		
5	Valid Contractor License		
6	PAN Details		
7	GST Details		
8	Relevant Experience Certificate as per tender conditions		
9	Financial Documents like turnover certificate, IT returns for last 3 Financial Years,		

Signature of the Contractor with Stamp