

# SCHOOL OF PLANNING AND ARCHITECTURE, BHOPAL

(Founded by MHRD, Government of India)

Neelbad Road, Bhauri, Bhopal (M.P.), India - 462030



## *TENDER DOCUMENT*

**Name of work:** Aluminium partition work in common hall at Boys Hostel II for creating workshop at SPA Bhopal.

Issued to: ~~~~~  
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Issued by:  
Institute Works Department (IWD)  
SPA Bhopal

# SCHOOL OF PLANNING AND ARCHITECTURE, BHOPAL

(Founded by MHRD, Government of India)

Neelbad Road, Bhauri, Bhopal (M.P.), India - 462030

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**Name of work: Aluminium partition work in common hall at Boys Hostel II for creating workshop at SPA Bhopal.**

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# SCHOOL OF PLANNING AND ARCHITECTURE, BHOPAL

(Founded by MHRD, Government of India)

Neelbad Road, Bhauri, Bhopal - 462030

## Tender Form

**Name of work:** Aluminium partition work in common hall at Boys Hostel II for creating workshop at SPA Bhopal.

**Project Number:** SPAB/IWD/BH-II/WS/2015.....

**Probable amount of Contract: Rs.** 8.04 Lacs (Approx.).....

**Cost of Tender Form: Rs.** 1500 /-.....

**Paid vide DD No.** ..... Dated .....

**Time allowed for Completion:** 01 Month .....

**Name of contractor/firm:** .....

**Address of the firm:** .....

.....

**Earnest Money Deposit: Rs.** .....

**Paid vide DD No.** ..... Dated .....

**Submission date:** To be submitted by 17:00 hours on ..... 19<sup>th</sup> May 2015..... (Date)

**Opening date:** Technical bid to be opened at 10:00 hours on 20<sup>th</sup> May 2015..... (Date)

Financial bid to be opened at 10:00 hours on 21<sup>st</sup> May 2015.....(Date)

**Place of Submission and Opening:** Office of the Dean (P & D), SPA Bhopal

**Dean (Planning & Development),**

Institute Works Department (IWD),

School of Planning and Architecture (SPA), Bhopal

## SCHOOL OF PLANNING AND ARCHITECTURE, BHOPAL

(Founded by MHRD, Government of India)  
Neelbad Road, Bhauri, Bhopal - 462030

### List of Important Dates of Bids

- |   |   |
|---|---|
| 1. Name of Work:  |   |
| <b>Aluminium partition work in common hall at Boys Hostel II for creating workshop at SPA Bhopal.</b> |   |
| 2. Completion Period for construction/up gradation:   | <b>01 month</b>   |
| 3. Date of Issue of Notice Inviting Bid   | Date- <b>08</b> -Month- <b>05</b> -Year- <b>2015</b>      |
| 4. Date for downloading of Tender documents -   | From Date- <b>08</b> -Month- <b>05</b> -Year- <b>2015</b> |
|   | to Date- <b>18</b> -Month- <b>05</b> -Year- <b>2015</b>   |
|   | Place (s) as given in NIT                                 |
| 5. Deadline for Receiving Bid   | Date- <b>19</b> -Month- <b>05</b> -Year- <b>2015</b>      |
|   | Time ... <b>17:00</b> ...Hours                            |
| 6. Time and Date for opening Technical Bid/Bids   | Date- <b>20</b> -Month- <b>05</b> -Year- <b>2015</b>      |
|   | Time ... <b>10:00</b> ...Hours                            |
| 7. Time and Date of opening Financial Bids  | Date- <b>21</b> -Month- <b>05</b> -Year- <b>2015</b>      |
|   | Time ... <b>10:00</b> ...Hours                            |
| 8. Place of opening bids Address is:  | As given in NIT   |
| 9. Last Date of Bid Validity  | As indicated in NIT                                       |
| 10. Officer inviting Bids:  | Director, SPA Bhopal                                      |

**Dean (Planning & Development)**  
Institute Works Department (IWD),  
School of Planning and Architecture (SPA), Bhopal

## SCHOOL OF PLANNING AND ARCHITECTURE, BHOPAL

(Founded by MHRD, Government of India)

Neelbad Road, Bhauri, Bhopal - 462030

### Notice Inviting Tenders

1. SPA Bhopal, invites sealed **Item Rate tenders** in three envelope system from Contractors registered in appropriate class with CPWD or Contractors of equivalent categories registered with other States/Central Government department, institutions, undertakings and authorities for following works of construction of Site administrative office building for SPA Bhopal.

Description of Works	Estimated Composite cost	EMD	Period of completion
Aluminium partition work in common hall at Boys Hostel II for creating workshop at SPA Bhopal	8.04 Lacs (Approx)	2%	01 month

2. The amount of earnest money is **2% of the estimated cost of the project.**
3. Time allowed for completion of entire work is 01 month.
4. The site for the work is available.
2. Bid documents consisting of qualification information and eligibility criterion of bidders, plans, specifications, drawings, the schedule of quantities of the various classes of work to be done and the set of contract to be complied with by the Contractor can be seen in the office of the Dean (P & D), SPA Bhopal, Neelbad Road, Vill. – Bhauri, Thesil. – Huzur, Bhopal on any working day during office hours from 9:30 Hrs. to 17:30 Hrs, except Saturday, Sunday & Govt. Holidays.
3. Tender document can be downloaded from the internet **www.spabhopal.ac.in** in such cases, the cost of tender document should be submitted along with the EMD in the form of separate Demand Drafts / Pay Orders of a Scheduled Bank drawn in favor of Director, SPA Bhopal.
5. Bidding documents must be delivered to **Dean (Planning & Development), Institute Works Department, School of Planning & Architecture Bhopal, Neelbad Road, Bhauri, Bhopal (M.P.) – 462030** on or before ... **19<sup>th</sup> May, 2015**... up to ... **17:00** hours. If the office happens to be closed on the date of receipt of the bids as specified, the bids will be received on the next working day at the same time and venue.
6. Bidding documents can also be delivered at the following places at the assigned date and time.

To,

The Director, SPA BHOPAL,

Neelbad Road, Bhopal (M.P.) – 462030

7. Technical bids will be opened at **10:00** hours on ...**20<sup>th</sup> May 2015**... in the office of concerned Dean (Planning & Development), SPA Bhopal, If the office happens to be closed on the date of opening of the bids as specified, the bids will be opened on the next working day at the same time and venue.
8. Financial bids shall be opened on ...**21<sup>st</sup> May 2015**... **from 10:00 hours**. at office of the Dean (Planning & Development), SPA Bhopal
9. To qualify for award of the Contract, each bidder should have in the last five years:
  - a. Achieved in any one year during last 5 years (including current year) a minimum financial turnover volume of similar work of at least the amount equal to the estimated cost of works (excluding maintenance cost for five years) for which bid has been invited. The turnover will be indexed at the rate of 8 percent for a year.
  - b. Satisfactorily completed, as prime Contractor, at least one similar work equal in value to one-third of the estimated cost of work for which the bid is invited.
10. Bids must be accompanied by the earnest money of the amount specified for the work in the table. The earnest money will have to be in any one of the forms as specified in the Bidding documents.
11. The bid for the work shall remain open for acceptance for a period of forty five days from the date of opening of bids. If any bidder/ tenderer withdraws his bid/ tender before the said period or makes any modifications in the terms and conditions of the bid, the said earnest money shall stand forfeited.
12. No Engineer of gazetted rank or other Gazetted officer employed in Engineering or Administrative duties in an Engineering Department of the State Government is allowed to work as a Contractor for a period of two years after his retirement from Government service, without Government permission. This contract is liable to be cancelled if either the Contractor or any of his employees is found any time to be such a person who had not obtained the permission of the Government as aforesaid before submission of the tender or engagement in the Contractor's service.
13. Other details can be seen in the bidding documents.

**Dean (Planning & Development),**  
Institute Works Department, SPA BHOPAL

## Section 2: Instructions to Bidders

1.0 The tenderers, who have down loaded the tenders from the web, should read the following important instructions carefully before actually quoting the rates & submitting the tender documents: -

- 1.1 The tenderer should see carefully & ensure that the complete tender document including schedule of Quantities have been down loaded & there are .....62+1 ..... Pages in all in the tender document.
- 1.2 The printout of tender document should be taken on A4 size paper only.
- 1.3 The tenderer should ensure that no page of the down loaded tender document is missing.
- 1.4 The tenderer should ensure that all pages of the down loaded tender document are legible & clear & are printed on a good quality paper.
- 1.5 The tenderer should ensure that every page of the downloaded tender document is signed by Tenderer with stamp (seal).
- 1.6 The tenderer should ensure that the down loaded tender document is properly bound and sealed before submitting the same.
- 1.7 The loose tenders not properly sealed shall be summarily rejected.
- 1.8 In case of any correction / addition / alteration / omission in the downloaded tender document, it shall be treated as non-Responsive and shall be summarily rejected.
- 1.9 The tenderer shall furnish a declaration to this effect that no addition / correction / alteration / omissions have been made in the tender document submitted, and it is identical to the tender document appearing on Web site *(9. Declaration)*.
- 1.10 The tenderer should read carefully and sign the declaration given before submitting the tender.
- 1.11 In case of partnership firm, an attested copy of partnership deed must be given along with eligibility credentials in envelope - 1.
- 1.12 In case of any doubt in the down loaded tender, the same should be got clarified from the O/o Dean (Planning & Development), IWD, SPA, Bhopal before submitting the tender.

2.0 Item rate tenders are invited on behalf of SCHOOL OF PLANNING AND ARCHITECTURE, BHOPAL (Founded by MHRD, Government of India) from approved, eligible and registered contractors of Public works organizations like CPWD, MES and local State P.W.D (B&R) for the work of **“Aluminium partition work in common hall at Boys Hostel II for creating workshop at SPA Bhopal”**

- 1.1 **The work is estimated to Cost Rs. 8.04 Lacs (approx.)/- (Rs. Eight lacs four thousand only)**
- 1.2 To qualify for award of the Contract, each bidder should have in the last five years:
  - a. Achieved in any one year during last 5 years (including current year) a minimum financial turnover volume of similar work of at least the amount equal to the estimated cost of



works (excluding maintenance cost for five years) for which bid has been invited. The turnover will be indexed at the rate of 8 percent for a year.

b. Satisfactorily completed, as prime Contractor, at least one similar work equal in value to one-third of the estimated cost of work for which the bid is invited.

It is clarified that the works should be in Central Government/Central Autonomous Bodies/Central Public Sector Undertakings/State Government and the certificate should be issued by the officer not below rank of Executive Engineer/ Project Manager or equivalent.

c. **Similar works:** Means the work of aluminium partition.

2. Deleted

3 The time allowed for carrying out the work shall be **01 month** from the 10th day after the date of issue of letter of award of work, or, from the first day of handing over of the site, whichever is later.

4 The site for the work is available.

5 The last date of receipt of application for participation in tender will be as follow:

(i) Last date and time of submission of tender ... **19<sup>th</sup> May 2015**..... up to **17:00** hrs

(ii) Date and time of opening of tender ... **20<sup>th</sup> May 2015**..... at **10:00** hrs

6 Tender documents consisting of following:

(a) Tender form

(b) Instructions to bidders

(c) Forms of Bid & Forms of Securities

(d) Bill of Quantities for works (BOQ)

(e) Technical Specifications

(f) Drawings

6.1 Following important documents can be seen in the office of the Associate Dean (Planning & Development), Institute Works Department (IWD) SCHOOL OF PLANNING AND ARCHITECTURE, BHOPAL (MP) Between 11.00 hours. & 17.00 hours every day except on Saturday, Sundays and Public Holidays.

(a) General condition of the contract,

(b) Annexure for safety measures, labour provisions, model codes,

(c) Various forms for bid etc.

6.2 Tender document can be downloaded from the internet [www.spabhupal.ac.in](http://www.spabhupal.ac.in).

6.2.1 The cost of the downloaded tender document (Rs. 1500/-) should be submitted along with the EMD in the form of separate Demand Drafts / Pay Orders of a Scheduled Bank drawn in favor of Director, SPA Bhopal.

7 Tenders, which should always be placed in sealed envelope, in the manner described at para 9 below with the name of work and due date written on the envelopes, will be received by the

**Dean (Planning & Development),**

**School of Planning & Architecture Bhopal,**

**Neelbad Road, Bhonri, Bhopal (M.P.) – 462030** Up to 17.00 Hrs. on ... **19<sup>th</sup> May 2015** (Date) and will be opened by him or his authorized representative in his office on **20<sup>th</sup> May 2015** at **10:00 Hrs.**

The financial bid shall be opened on ... **21<sup>st</sup> May 2015**... (Date) at **10:00 Hrs** by Institute Architect, or his authorized representative.

- i). After opening the main envelope 3, the envelope 1 containing the “Earnest money” and eligibility credentials shall be opened first.
- ii). The envelope 2 containing tender shall be opened only for those tenderers whose Earnest money and eligibility is found in order.
- iii). The unopened tenders shall be returned to the tenderers after the final decision on the tender is reached.

8. The description of the work is as follows: - **“Aluminium partition work in common hall at Boys Hostel II for creating workshop at SPA Bhopal”**

9.0 **Submission of tender:** The tender shall be submitted in the following manner:

9.1 The Bidder shall place the three separate envelopes (called inner envelopes) marked “EMD”, “Technical Bid” and “Financial Bid” in one outer envelope. The inner envelopes will have markings as follows:

- (a) EMD.
- (b) Technical Bid: To be opened on **20<sup>th</sup> May 2015** at **10:00 Hrs.**
- (c) Financial Bid: Not to be opened except with the approval of the Employer.

**Note: The priced BOQ should be placed only with Financial Bid envelope only, failing which the tender shall be rejected.**

9.1.1 The contents of the Technical bid shall be as follows:

- (a) Properly filled tender document. (Except Form – 8)
- (b) Qualification information, supporting documents, affidavit and undertaking as specified in *Form 3.Bidder Information*
- (c) Undertaking that the bid shall remain valid for the period specified in *Form 4.Declaration Statement*
- (d) Any other information/documents required to be completed and submitted by bidders, as specified in the Tender Document, and
- (e) An affidavit affirming that information he has furnished in the bidding document is correct to the best of his knowledge and belief. (*Form 13. Affidavit by contractor*)

9.1.2 The contents of the Financial Bids shall be as follows:

- (i) Form of Bid as specified in Section 5 (form 8. Letter of financial bid)
- (ii) Priced bill of quantities for Non Scheduled items specified in Section 6;

9.2 All the three envelopes EMD, Technical & Financial Bids shall be superscripted with following data.

- (i) Name of work
- (ii) Name of tenderer
- (iii) Last date of receipt of tender

**Note:** In case the eligibility credentials are not found in order at any stage i.e. before award of work or during execution of the work or after completion of the work, the contractor will be debarred from tendering in SPA Bhopal for three years including any other action under the contract or existing law.

- 9.3 The tender in which rates are to be quoted should be properly bound and sealed.
10. Copies of other drawings and documents, if any, pertaining to the work will be open for inspection by the tenderers at the office of the above-mentioned officer.
- 10.1 Tenderers are advised to inspect and examine the topography of the site and satisfy themselves before submitting their tenders as to the nature of the terrain and sub-soil in general (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general, shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender. Tenderer shall be deemed to have full knowledge of the site & its location whether he inspects it or not and no extra charges consequent on any misunderstanding or otherwise shall be allowed. The tenderer shall be responsible for arranging and maintaining at his own cost all materials tools & plants, water, electricity, access facilities for workers and on all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of tender by a tenderer implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by the SPA Bhopal and local conditions and other factors having a bearing on the execution of the work.
11. The competent authority on behalf of SPA Bhopal does not bind himself to accept the lowest or any other tender, and reserves to himself the authority to reject any or all of the tenders received without the assignment of a reason. Any tenders, in which any of the prescribed conditions is not fulfilled or any condition including that of conditional rebate is put forth by the tenderer, shall be summarily rejected.
12. Canvassing whether directly or indirectly, in connection with tenders is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable to rejection.
13. The competent authority on behalf of the SPA Bhopal reserves with himself the right of accepting the whole or any part of the tender and the tenderer shall be bound to perform the same at the rate quoted.
14. The company or firm or any other person shall not be permitted to tender for works in SPA Bhopal in which his near relative (s) (directly recruited or on deputation in SPA Bhopal) is/are

posted in any capacity either non-executive or executive employee. Near relative (s) for this purpose is/are defined as: –

(i) Member of Hindu Undivided family (HUF).

(i) They are Husband and Wife.

(ii) The one is related to other in the manner as father, mother, son(s) & Son's wife (daughter-in-law), Daughter(s), Daughter's husband (son-in-law), brother(s), brother's wife, sister(s), sister's husband (brother-in-law).

The contractor shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relative to any executive employee/ officer in the SPA Bhopal.

All the intending tenderers will have to give a certificate that none of his/her such near relative (s) as defined above is/are working in the concerned department where he is going to apply for tender/work. The format of the certificate is to be given as:-

“I, \_\_\_\_\_ S/O Shri \_\_\_\_\_ Resident of \_\_\_\_\_ hereby certify that none of my relative (s) as defined in clause 14 of the notice inviting tender of NIT No. \_\_\_\_\_ is/are employed in concerned SPA Bhopal. In case at any stage, it is found that the information given by me is false / incorrect, SPA Bhopal shall have the absolute right to take any action as deemed fit without any prior intimation to me”.

The certificate in case of Proprietorship Firm shall be given by the proprietor; for Partnership Firm certificate shall be given by all partners and in case of Limited Company, by all Directors of the company. However, Government of India / Financial Institutions nominees and independent non-official part-time Directors appointed by Govt. of India or the Governor of the State are excluded from the purview of submission of this certificate while submitting tenders by Limited Companies.

Any breach of these conditions by the Company or Firm or any other person, the tender / work will be cancelled and Earnest Money / Security Deposit will be forfeited at any stage, whenever it is so noticed. The department will not pay any damages to the company or Firm or the concerned person. The Company or Firm or the person will also be debarred for further participation in the tender in the concerned SPA Bhopal. Further, any breach of this condition by the tenderer would also render him liable to be removed from the approved list of contractors of this Department. If however the contractor is registered in any other Department he shall also be debarred from tendering in SPA Bhopal for any breach of this condition.

15. No Engineer of Gazetted rank or other Gazetted Officer employed in engineering or administrative duties in an Engineering Department of the Government of India or SPA Bhopal is allowed to work as a contractor for a period of two years after his retirement from Govt. service, without previous permission of the Govt. of India or SPA Bhopal in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found any

- time to be such a person who had not obtained the permission of the Govt. of India or SPA Bhopal as aforesaid before submission of the tender or engagement in the contractor's service.
16. The tender for the work shall remain open for acceptance for a period of 30 days from the date of opening of the tenders. If any tenderer withdraws his tender before the said period issues of letter of acceptance / intent, whichever is earlier or makes any modifications in the terms and conditions of the tender which are not acceptable to the SPA Bhopal, then the SPA Bhopal shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money as aforesaid.
17. In case of works having estimated cost below Rs.15,00,000/-, the successful tenderer shall be required to execute an agreement with the SPA Bhopal in the Performa annexed to the tender document, within 15 days of the issue of letter of award by the SPA Bhopal. In the event of failure on the part of the successful tenderer to sign the agreement, the earnest money will be forfeited and tender cancelled. In case of works of estimated to cost Rs.15, 00,000/- and above, the successful tenderer shall, upon issue of letter of acceptance of Tender, shall be required to furnish **Performance Guarantee@ 5% of the tendered value in the form of** irrevocable Bank Guarantee of requisite amount to the SPA Bhopal in the Performa annexed to the tender document or **in the form of fixed deposit receipts**, within 15 days of the issue of letter of acceptance of Tender by the SPA Bhopal. In the event of failure on the part of the successful tenderer to furnish the Bank Guarantee within 15 days, the earnest money will be forfeited and tender cancelled.
18. This Notice Inviting Tender shall form a part of the Contract Document. In accordance with clause 1 of the contract, the letter of acceptance shall be issued first in favour of the successful Tenderer/Contractor. After submission of the performance guarantee, the letter of award of work shall be issued. The contract shall be deemed to have come into effect on issue of letter of acceptance of the tender. On the issue of letter of award, the successful Tenderer/Contractor shall, within 15 days from such date, formally sign the agreement consisting of: -
- a) The Notice Inviting Tender, all the documents including additional conditions, specifications and drawings, if any, forming part of the tender, and, as issued at the time of invitation of tender and acceptance thereof together with any correspondence leading thereto.
- b) Standard "General Conditions of Contract for Civil Works & particular specification, safety code, Model rule for the protection of health & sanitary arrangement for workers, labour regulation, and various other Proforma are available in the offices of the Institute works department of SPA Bhopal.
- c) Agreement signed on non-judicial stamp paper as per Proforma annexed to the tender document.
19. Payment to the contractors shall be made through e-payment system like ECS & EFT as detailed below: -

- (a) In cities/areas where ECS/EFT facility is provided by Banks, the tenderer must have Account in such ECS/EFT facility providing Banks and that Bank A/c No shall be quoted in the tender by the tenderer.
  - (b) The cost of ECS/EFT will be borne by SPA Bhopal in all cases where the payment to contractor is made in a local Branch i.e. tenderer is having bank account in the same place from where the payment is made by SPA Bhopal.
  - (c) In case payment is made to outside branch i.e. tenderer is having bank account not in the same place from where the payment is made by SPA Bhopal, the crediting cost will have to be borne by the tenderer only.
  - (d) The payments to contractors will compulsorily be made through ECS/EFT in respect of all contracts where the value of the contract is more than Rs. 10 lakhs. First running account bill shall be paid only after
    - (i) Signing of the Agreement/Contract by both the parties, and
    - (ii) Progress chart has been prepared as required under Clause 5 and approved by the competent authority.
20. If a contractor after purchasing the tender does not quote consecutively on three occasions, the contractor may be debarred for further purchase of tenders for a period of six months.
21. The contractor should furnish following details to establish their eligibility and capabilities for the project in Performa given herewith
- (a) Bidder, Qualification and other information: performa-3
  - (b) Declaration: performa-4
  - (c) Bankers authority: performa-5
  - (d) Financial capabilities: performa-6 & 7
  - (e) Letter of financial bid: performa-8
  - (f) Declaration: performa – 9
  - (g) Confirmation letter: performa – 10
  - (h) Agreement: performa – 11
  - (i) Performance Guarantee: performa – 12
  - (j) Affidavit: performa – 13

**Dean (Planning & Development)**  
Institute Works Department  
SPA Bhopal

Section ~3  
General condition of contract-Part-I  
&  
Section ~4  
Appendix- Labor laws, Model rules etc.

**Please refer at office of the Institute Architect**

**or**

**CPWD GCC ~ 2010**

**Section ~5**  
**Forms of Bid & Forms of Securities**

<b>S.N.</b>	<b>Particulars</b>	<b>Page no.</b>
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### 1. Letter of Application

(Letterhead paper of the Bidder)

[Including full postal address, telephone, fax, cable and telex addresses]

[Date]

To,  
The Director, SPA BHOPAL,  
Neelbad Road, Bhonri, Bhopal (M.P.) – 462030  
Phone: 0755 - 6497481

**Subject:** Application to issue Tender form

Sir,

1. Being duly authorized to represent and act on behalf of.....  
(Hereinafter “the bidder”), and having reviewed and fully understood all the bid information provided,  
*the undersigned hereby apply to be qualified by your agency as a bidder for the contract of the*  
“.....  
.....

2. SPA Bhopal and its associates/ representatives are hereby authorized to conduct any inquiries or investigations to verify the statements, documents, and information submitted in connection with this application, and to seek clarification from our bankers and clients regarding any financial and technical aspects. This Letter of Application will also serve as authorization to any individual or authorized representative of any institution, to provide such information deemed necessary to verify statements and information provided in this application or with regard to the resources, experience, and competence of the Bidder.

3. This application is made in the full understanding that:

(a) SPA Bhopal reserves the right, to reject or accept any application, cancel the bidding process and reject all applications; and

(b) SPA Bhopal shall not be liable for any such actions and shall be under no obligation to inform the Bidder of the grounds for them.

4. The undersigned declared that the statements made and the information provided in the duly completed application are complete, true, and correct in every detail.

Authorised Signature  
Name and Title of Signatory

## 2. Letter of Submission of Bid

To,  
The Director, SPA BHOPAL,  
Neelbad Road, Bhonri, Bhopal (M.P.) – 462030  
Phone: 0755 - 6497481

**Subject:** Application to submission of Tender form

Sir,

I/We have read and examined notice inviting tender, specifications applicable, Drawings & Design, Instructions to bidders, General Conditions of Contract, appendix, Special conditions, Schedule of Rate & other documents and Rules referred to in the Conditions of Contract and all other contents in the tender document for the work.

I/We hereby tender for the execution of the work specified for School of Planning and Architecture, Bhopal within the time specified in contract data as per schedule of quantities and in accordance in all respects with the specifications, designs, drawings and instructions in writing referred to General Conditions of the contract and with such materials as are provided for, by and in respect in accordance with, such conditions so far as applicable.

I/We agree to keep the tender open for **30** days from the due date of submission thereof and not to make any modifications in its terms and conditions. If I/We withdraw my/our tender before the said period or issue of letter of acceptance/intent, whichever is earlier, or, makes any modifications in the terms and conditions of the tender which are not acceptable to the SPA Bhopal, then the SPA Bhopal shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money as aforesaid.

**A sum of Rs .....**/(.....) has been deposited in prescribed manner as earnest money. If I/We fail to commence the work specified I/We agree that the said SPA Bhopal shall without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely otherwise said earnest money shall be retained by competent authority on behalf of the SPA Bhopal towards Security Deposit to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to therein and carry out such deviations as may be ordered, upto maximum of the percentage mentioned in contract data.

I/We hereby intimate that for receiving payments I/we have an account in \_\_\_\_\_ Bank with account No. \_\_\_\_\_ Where the ECS / EFT facility of e-payment is available.

I/We hereby declare that I/We shall treat the tender documents drawings and other records connected with the work as secret/confidential documents and shall not communicate information derived therefrom to any person other than a person to whom I/We am/are authorized to communicate the same or use the information in any manner prejudicial to the safety of the State.

I/We agree that should I/We fail to commence the work specified in the above memorandum, an amount equal to the amount of the earnest money mentioned in the form of invitation of tender shall be absolutely forfeited to the SPA Bhopal and the same may at the option of the competent authority on behalf of the SPA Bhopal be recovered without prejudice to any right or remedy available in law out of

the deposit in so far as the same may extend in terms of the said bond and in the event of deficiency out of any other money due to me/us under this contract or otherwise.

I/We agree that this contract is subject to jurisdiction of court at Bhopal, M.P. only.

Dated.....

Witness:	( )
Address:	Signature of Contractor
Occupation:	Postal Address: -

\*\*\*\*\*

*A C C E P T A N C E*

The above tender (as modified by you (Contractor) and as provided in the letters mentioned hereunder) is accepted by me for and on behalf of the SPA Bhopal for a sum of Rs. \_\_\_\_\_

(Rupees \_\_\_\_\_

\_\_\_\_\_ ) the letters referred to

below shall form part of this Contract Agreement:-

- (a)
- (b)
- (c)

**Dean (Planning & Development)**  
 Institute Works Department  
 SPA Bhopal

### 3. Bidder, Qualification and other information

#### **Notes on Form of Qualification Information**

The information to be filled in by bidders in the following pages will be used for purposes of post-qualification as provided for in Clause 4 of the Instructions to Bidders. This information will not be incorporated in the Contract. Attach additional pages as necessary.

#### **1. Individual Bidders**

1.1 Constitution or legal status of Bidder: (Attach copy)

(a) Place of registration:

(b) Principal place of business:

(c) Power of attorney of signatory of Bid

1.2 Total annual volume of civil engineering construction work executed and payments received in the last five years proceeding the year in which bids are invited.

*(Attach certificate from Chartered Accountant)*

S.N.	Financial Year	Amount (In Lakhs)
01	2011-12	
02	2010-11	
03	2009-10	
04	2008-09	
05	2007-08	

1.3 Work performed as prime Contractor (in the same name and style) on construction works of a similar nature and volume over the last five years. *(Attach certificate from the Engineer-in-charge)*

S.N.		Project-1	Project-2	Project-3	Project-4
01	Project Name				
02	Name of Employer				
03	Description of work order				
04	Value of contract				
05	Contract No.				
06	Date of Issue of Work				
07	Stipulated Date of Completion				
08	Actual Date of Completion				
09	Remarks for Delay, if any				

1.3.1 Information on Bid Capacity (works for which bids have been submitted and works which are yet to be completed) as on the date of this bid.

**1.4 Existing commitments and on-going construction works:**

S.N.		Project-1	Project-2	Project-3	Project-4
01	Description of Work				
02	Place & State				
03	Contract No & Date				
04	Name & Address of Employer				
05	Value of Contract (Rs. In lakhs)				
06	Stipulated period of completion				
07	Value of works remaining to be completed (Rs. Lakhs)*				
08	Anticipated Date of completion				
09	Remarks for Delay, if any				

\* Enclose certificate(s) from Engineer(s)-in-charge for value of work remaining to be completed.

**1.5 Works for which bids already submitted:**

S.N.		Project-1	Project-2	Project-3	Project-4
01	Description of Work				
02	Place & State				
03	Name & Address of Employer				
04	Value of work (Rs. In lakhs)				
05	Stipulated period of completion				
06	Date when decision is expected				
07	Remarks for Delay, if any				

**1.6** Availability of Major items of Contractor's Equipment proposed for carrying out the Works. List all information requested below. Refer also to Clause 4.2(d) and Clause 4.4 b (b) of the Instructions to Bidders.

S.N.	Item of Equipment	Description, make, and age (Years), and capacity	Condition (new, good, poor) and number available	Owned, leased (from whom?), or to be purchased
01				
02				
03				
04				
05				
06				
07				

**1.7** Qualifications of technical personnel proposed for the Contract. Refer also to Clause 4.2(e) of the Instructions to Bidders and Clause 9.1 of Part-1 General Conditions of Contract.

S.N.	Name of employee	Post held	Qualification	Experience	
				Road works	Building works
01					
02					
03					

**1.8** Proposed sub-contractors and firms involved for construction. Refer to Clause 7 of Part I General Conditions of Contract.

S.N.	Sections of the Works	Value of subcontract	Sub-contractor(name and address)	Experience in similar work
01				
02				

*Note: The capability of the sub-Contractor will also be assessed (on the same lines as for the main Contractor) before according approval to him.*

**1.9** Financial reports for the last five years: balance sheets, profit and loss statements, auditors' reports, etc. List below and attach copies.

(A)

(B)

**1.10** Evidence of access to financial resources to meet the qualification requirements: cash in hand, lines of credit, etc. List below and attach copies of support documents. (Sample format attached).

(A)

(B)

**1.11** Name, address, and telephone, telex, and facsimile numbers of banks that may provide references if contacted by the Employer.

(A)

(B)

**1.12** Information on current litigation in which the Bidder is involved.

S.N.	Name of Other party(s)	Cause of dispute	Litigation where (Court/arbitration)	Amount involved
01				
02				

**1.11** Proposed Programme (work method and schedule). Descriptions, drawings, and charts as necessary, to comply with the requirements of the bidding documents.

#### 4. Declaration Statement

*(Letterhead paper of the Bidder)*

[date]

To,  
The Director, SPA BHOPAL,  
Neelbad Road, Bhonri, Bhopal (M.P.) – 462030  
Phone: 0755 – 6497481

Dear Sir:

1. I, the undersigned, do hereby certify that all the statements made in the application and attachments thereto are true and correct.
2. The undersigned also hereby certifies that neither our firms M/s..... nor any of its constituent partners have abandoned any work awarded to us by any Agency in India nor any contract awarded to us for such works has been rescinded, during last five years prior to the date of this application.
3. The undersigned also furnish undertaking that we are not declared by any court of law as proclaimed offenders also that we are not convicted under any law for the offences punishable under Indian Penal Code, Negotiable Instrument Act of any Labour/ employee beneficial legislations.
4. The undersigned hereby authorize(s) and request(s) any bank, person, firm or corporation to furnish pertinent information deemed necessary and requested by to verify this statement or regarding my (our) competence and general reputation.
5. The undersigned understands and agrees that further qualifying information may be requested, and agrees to furnish any such information at the request of the SPA Bhopal

Signed by an Authorised Officer of the Firm

Title of Officer

Name of Firm

Date

**5. SPECIMEN FORMAT FROM BIDDER TO BANKERS AUTHORISING THEM TO PROVIDE  
INFORMATION TO SPA BHOPAL / ITS REPRESENTATIVES**

To

Name of Bank/ Address/ city

Dear Sir:

We have recently submitted a Bid Proposals to School of Planning and Architecture Bhopal, for implementing its project for \_\_\_\_\_.

We hereby authorize you to provide all information/ data readily about us and our credit status, as may be desired by SPA Bhopal and you need not seek any clearance/ opinion from us for providing the information/ data to SPA Bhopal.

Sincerely,  
Authorised Signatory



## 6. Financial Capability-1

### Name of Bidder:-

Bidder should provide financial information to demonstrate that they meet the requirements stated in the Instructions to Bidders. Each Bidder shall complete this form. If necessary, use separate sheets to provide complete banker information. A copy of the audited balance sheets should be attached. Autonomous construction subdivisions of parent conglomerate business shall submit financial information related only to the particular activities of the subdivision.

1. Name of Banker
2. Address of Banker
3. Telephone Contract name and title
4. Tax E-mail

*Summarize actual assets and liabilities for the previous five years.*

S.N.	Financial Information in Indian Rupees	Actual: Previous Five years.				
		5	4	3	2	1
01	Total assets					
02	Current assets					
03	Total Liabilities					
04	Net Worth					
05	Working Capital					
06	Current Liabilities					
07	Profits before taxes					
08	Profits after taxes					

*Specify proposed sources of financing such as liquid assets, unencumbered real estates, lines of credit and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contract or contracts as indicated in Instructions to Bidders \_\_\_\_\_.*

S.N.	Source of finance	Amount

*Attach audited financial statements for the last five years (for the individual Bidder or each partner of a joint venture).*

*Note: (1) For previous five year, year 1= 2011-2012, year 2= 2010-2011 etc.*

## 7. Financial Capability-2

### Name of Bidder:-

Bidder should provide financial information to demonstrate that they meet the requirements stated in the Instructions to Bidders. Each Bidder shall complete this form. If necessary, use separate sheets to provide complete banker information. A copy of the audited balance sheets should be attached. Autonomous construction subdivisions of parent conglomerate business shall submit financial information related only to the particular activities of the subdivision.

1. Name of Banker
2. Address of Banker
3. Telephone Contract name and title
4. Tax E-mail

*\* If more than one banker is proposing to finance the project(s), the details in the above format may be appendix on all bidders*

*The Details of financial capability (as indicated in Clause 5.1 of Instructions to Bidders) is as under*

<i>S.N.</i>	<i>Source of finance</i>	<i>Amount</i>
<i>01</i>	Net working capital	
<i>02</i>	Lines of credit from Banks (Bank Certificate enclosed)	
<i>03</i>	Other financial means	
<i>04</i>	Own Resources	
<i>05</i>	Available money guarantees (name and address of banks given)	
<i>A</i>	<b>Total of A</b>	
<i>01</i>	Liability during next 3 years	
<i>03</i>	Financial Commitments for ongoing civil works	
<i>03</i>	Other commitments	
<i>B</i>	<b>Total of B</b>	

*Note: All the above items shall be supported by specific details/list of items/certified balance sheet*

## 8. Letter of financial bid

*(Letterhead of the Bidder)*

Ref. no.

[date]

To,  
The Director, SPA BHOPAL,  
Neelbad Road, Bhonri, Bhopal (M.P.) – 462030  
Phone: 0755 – 6497481

**Subject: “Aluminium partition work in common hall at Boys Hostel II for creating workshop at SPA Bhopal”**

Dear Sir:

1.0 Having examined the Bid Document including Notice Inviting Bids, Instructions to Bidders, General Conditions of Contract, Special Conditions of Contract, Technical Specifications, Bill of Quantities, Drawings, Schedules and Annexure for the execution of the above named works, we, the undersigned, offer to execute and complete such works and remedy any defects therein in conformity with the said Bid Document at the prices indicated in Schedule 1 to this letter.

2.0 Our financial bid for the execution of the above said project as per bill of quantity, drawings and specifications attached herewith will be Rs. \_\_\_\_\_ (In Words: \_\_\_\_\_ only) Including of all taxes and duties applicable.

3.0 We undertake, if our Bid is accepted, to commence the works within fourteen (14) days of receipt of the Engineer’s order to commence, and to complete and deliver the sections and whole of the works comprised in the Contract within the specified period. We also undertake to furnish Performance Security (ie) in the form of a Bank Guarantee in accordance with the Conditions of Contract.

4.0 We agree to abide by this Bid for the period of thirty days (30 days) from the date of Bid opening and it shall remain binding upon us and may be accepted at any time before the expiry of that period.

5.0 We confirm our agreement to treat the Bid Document, Drawings and other records connected with the works as secret and confidential document and shall not communicate information contained therein to any other person other than the person authorized by Employer or use such information in any manner prejudicial to the safety and integrity of the works.

6.0 We undertake that, in completing for (and, if the award is made to us, in executing) the above Contract, we will observe the laws against fraud and corruption in force in India namely “Prevention of Corruption Act 1988”. We confirm that our firm has valid VAT/PAN registrations along with EPF, ESI codes as stipulated.

7.0 We hereby confirm that this Bid complies with the Eligibility, Bid validity and Bid security required as stated in the Bidding documents.

Name of Bidder with official seal  
Address:

Yours faithfully,  
Authorised Signature:  
Name and Title of Signatory:

## 9. Declaration

*(Letterhead of the Bidder)*

Ref. no.

[date]

To,  
The Director, SPA BHOPAL,  
Neelbad Road, Bhonri, Bhopal (M.P.) – 462030  
Phone: 0755 – 6497481

**Subject: “Aluminium partition work in common hall at Boys Hostel II for creating workshop at SPA Bhopal”**

Dear Sir:

It is to certify that:-

- 1) I / we have submitted the tenders in the Proforma as downloaded directly from the website. &there is no change in formatting, number of pages etc.
- 2) I / We have submitted tender documents which are same / identical as available in the Website.
- 3) I / we have not made any corrections / additions / alteration / omission etc in the tender documents downloaded from web by me / us.
- 4) I / We have checked that no page is missing and all pages as per the index are available & that all pages of Tender document submitted by us are clear & legible.
- 5) I / we have signed (with stamp) all the pages of the tender document before submitting the same.
- 6) I / we have sealed the tender documents properly before submitting the same.
- 7) I / We have submitted the cost of tender along with the EMD.
- 8) I / we have read carefully & understood the important instructions to the tenderers who have down loaded the tenders from the web.
- 9) In case at any later stage, it is found that there is difference in our downloaded tender documents from the Original, SPA, Bhopal shall have the absolute right to take any action as deemed fit without any prior intimation to Me / Us.
- 10) In case at any later stage, it is found that there is difference in our downloaded tender documents from the Original, the tender / work will be cancelled and Earnest Money / Security Deposit will be forfeited at any stage whenever it is so noticed. The department will not pay any damages to me / us on this account.
- 11) In case at any later stage, it is found there is difference in our downloaded tender documents from the Original, I / We may also be debarred for further participation in the tenders for SPA. Bhopal & would also render me / us liable to be removed from the approved list of contractors of the Department.

Name of Bidder with official seal  
Address:

Yours faithfully,  
Authorised Signature:  
Name and Title of Signatory:

### 10. Confirmation Letter

*(Letterhead of the Bidder)*

*Ref. no.*

*[Date]*

To,  
The Director, SPA BHOPAL,  
Neelbad Road, Bhonri, Bhopal (M.P.) – 462030  
Phone: 0755 – 6497481

***Subject: “Aluminium partition work in common hall at Boys Hostel II for creating workshop at SPA Bhopal.”***

DEAR SIR,

We acknowledge receipt of your letter of Intent, ref..... Dated..... and unconditionally accept the offer to take up above captioned works at the price indicated in the letter of intent.

We also confirm our acceptance to all the corrections and modifications made by the Employer in respect of our bid.

We undertake to provide you unconditional bank guarantee towards performance security and additional security for unbalanced bid as per the agreed format within the prescribed data as per the Instructions to Bidder and Conditions of Contract.

Yours faithfully,  
Authorized Signature:  
Name and Title of Signatory:  
Name of Agency:

**11. PROFORMA FOR AGREEMENT****(ON NON-JUDICIAL STAMP PAPER OF APPROPRIATE VALUE)**

CONTRACT AGREEMENT FOR THE WORK OF -----DATED-----  
 Between M/s----- (refer note) in the town of  
 \_\_\_\_\_hereinafter called the contractor (which term shall unless excluded by or repugnant to  
 be subject or context include its successors and permitted assigns) of the one part and the School of  
 Planning and Architecture, Bhopal hereinafter called the SPA Bhopal (which term shall unless excluded  
 by or repugnant to the subject or context include its successes and assigns) of the other part.

**WHEREAS**

a. The SPA Bhopal is desirous that the construction of \_\_\_\_\_ at  
 \_\_\_\_\_ should be executed as mentioned, enumerated or referred to in the tender including Press  
 Notice Inviting Tender, General Conditions of the Contract, Special Conditions of the Contract,  
 Specifications, Drawings, Plans, Time Schedule of completion of jobs, Schedule of Quantities and Rates,  
 Agreed Variations, other documents, has called for Tender.

b. The contractor has inspected the site and surroundings of the work specified in the tender documents  
 and has satisfied himself by carefully examination before submitting his tender as to the nature of the  
 surface, strata, soil, sub-soil and grounds, the form and nature of the site and local conditions the  
 quantities, nature and magnitude of the work the availability of labour and materials necessary for the  
 execution of work, the means of access to site, the supply of power and water thereto and the  
 accommodation he may require and has made local and independent enquiries and obtained complete  
 information as to the matters and things referred to or implied in the tender documents or having any  
 connection therewith, and has considered the nature and extent of all the probable and possible  
 situations, delays, hindrances or interferences to or with the execution and completion of the work to  
 be carried out under the contract, and has examined and considered all other matters, conditions and  
 things and probable and possible contingencies, and generally all matters incidental thereto and  
 ancillary thereof affecting the execution and completion of the work and which might have influenced  
 him in making his tender.

c. The tender documents including the SPA BHOPAL's Press Notice Inviting Tender, General conditions  
 of contract, Special Conditions of Contract, Schedule of Quantities and rates, General obligations,  
 Specifications, Drawings, plan, time schedule for completiOn of work. Letter of Acceptance of tender  
 and any statement of agreed variations with its enclosures copies of which are hereto annexed form  
 part of this contract though separately set out herein and are included in the expression Contract  
 wherever herein used.

**AND WHEREAS**

The SPA Bhopal accepted the tender of M/s ----- (refer note-----)  
 (Contractor) for the construction of ----- at -----  
 and conveyed vide letter No.-----dated -----at the rates stated in the  
 Schedule of quantities for the work and accepted by the SPA BHOPAL (hereinafter called the Schedule  
 of Rates) upon the terms and subject to the conditions of the contract.

**NOW THIS AGREEMENT WITNESSTH & IT IS HEREBY AGREED AND DECLARED AS FOLLOWS.**

1. In consideration of the payment to be made to the contract for the work to be executed by him, the contractor hereby convenient with the SPA BHOPAL that the contractor shall and will duly provide, execute, complete and maintain the said work and shall do and perform all other acts and things in the contract mentioned or described or which are to be implied and there-from or may be reasonably necessary for the completion of the said works and at the said times and in the manner and subject to the terms and conditions or stipulations mentioned in the contract, AND
2. In consideration of the due provisions execution, completion and maintenance of the said work, the SPA BHOPAL does hereby agree with the contractor that the SPA BHOPAL will pay to contractor the respective amounts for the work actually done by him and approved by the SPA BHOPAL at the Schedule or Rates and such other sum payable to the contractor under provision of the contract, such payment to be made at such time in such manner as prescribed for in the contract.
3. The contract is subjected to jurisdiction of court at Madhya Pradesh only. It is specifically and distinctly understood and agreed between the SPA BHOPAL and the contractor that the contractor shall have no right, title or interest in the site made available by the SPA BHOPAL for execution of the works or in the building, structures or works executed on the said site by the contractor or in the goods, articles, materials, etc. brought on the said site (unless the same specifically belongs to the contractor) and the contractor shall not have or deemed to have any lien whatsoever charge for unpaid bills will not be entitled to assume or retain possession or control of the site or structures and the SPA BHOPAL shall have an absolute and unfettered right to take full possession of site and to remove the contractor, their servants, agents and materials belonging to the contractor and lying on the site.

In Witness whereof the parties hereto have here-into set their respective hands and seals in the day and the year first above written.

Signed and delivered for and on behalf of  
SPA BHOPAL  
OFFICIAL ADDRESS

*Date*  
*Place*

Signature and delivered for and on  
behalf of the contractor

(Contractor)  
*Date*  
*Place*

IN PRESENCE OF TWO WITNESSES

SIGNATURE  
NAME  
SIGNATURE  
NAME

SIGNATURE  
NAME  
SIGNATURE  
NAME

**For Proprietary Concern**

Shri.....s/o.....r/o.....carrying on business under the name and style of.....at..... (Hereinafter called the said Contractor which expression shall unless the context requires otherwise include his heirs, executors, administrators and legal representatives).

**For Partnership Concern**

M/s .....a partnership firm having its registered office at .....(hereinafter called the said Contractor which expression shall unless the context requires otherwise include his heirs, executors, administrators and legal representatives). The partners of the firms are:

- i) Shri .....s/o....., And
- i) Shri .....s/o.....etc.

**For Companies**

M/s .....a company duly incorporated under the Indian Companies Act, 1956 and having its registered office at .....in the state of .....(hereinafter called the said Contractor which expression shall unless the context requires otherwise include its successors and assign).



**12. FORM OF PERFORMANCE SECURITY****BANK GUARANTEE BOND**

1. In consideration of the SPA BHOPAL (hereinafter called “the SPA BHOPAL”) having agreed under the terms and conditions of agreement No. \_\_\_\_\_ Dated \_\_\_\_\_ made between \_\_\_\_\_ and \_\_\_\_\_ (hereinafter called “the said contractor(s)”) for the \_\_\_\_\_ work (hereinafter called “the said agreement”) for compliance of his obligation in accordance with the terms and conditions in the said agreement.

We \_\_\_\_\_ (indicate the name of the Bank) (hereinafter referred to as “as Bank) hereby undertake to pay to the SPA BHOPAL and amount not exceeding Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only) on demand by the SPA BHOPAL.

2. We \_\_\_\_\_ (Indicate the name of the Bank) do hereby undertake to pay the amount due and payable under this Guarantee without any demure, merely on a demand from the SPA BHOPAL stating that the amount claimed is required to meet the recoveries due or likely to be due from the said contractor(s). Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only).

3. We undertake to pay to the SPA BHOPAL any money so demanded notwithstanding any dispute or disputes raised by the contractor (s) in any suit or proceeding pending before any court or Tribunal relating thereto our liability under this present being absolute and unequivocal. The payment made by us under this bond shall be valid discharge of our liability for payment to there-under and the contractor(s) shall have no claim against us making such payment.

4. We \_\_\_\_\_ (Indicate the name of Bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of the SPA BHOPAL under or by virtue of the said agreement have been fully paid and it is claims satisfied or discharged or till Engineer-in-charge on behalf of the SPA BHOPAL certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said contractor(s) accordingly discharges this guarantee.

5. We \_\_\_\_\_ (indicate the name of Bank) further agree with the SPA BHOPAL that the SPA BHOPAL 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 agreement or to extend time of performance by the said contractor(s) from time to time or to postpone for any time to time any of the powers exercisable by the SPA BHOPAL against the said contractor(s) and to forebear or enforce any of the terms and conditions relating to the said agreement shall not be relieved from our liability by reasons of any such variation or extension being granted to the said contractor(s) or for any forbearance act of omission on that part of the SPA BHOPAL or any indulgence by the SPA BHOPAL to

the said contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effected or so relieving us.

6. The guarantee will not be discharged due to the change in the constitution of the Bank or the contractor(s).

7. We \_\_\_\_\_ (indicate the name of Bank) lastly undertake not to revoke this guarantee except with the previous consent of the SPA BHOPAL in writing.

8. This guarantee shall be valid upto \_\_\_\_\_ unless extended on demand by SPA BHOPAL. Notwithstanding any thing mentioned above our liability against this Guarantee is restricted to Rs. \_\_\_\_\_ (Rs. \_\_\_\_\_ only) and unless a claim in writing is lodged with us within six months of the date of expiry or the extended date of expiry of this guarantee, all our liabilities under the Guarantee shall stand discharged.

Date the \_\_\_\_\_ date of \_\_\_\_\_

For \_\_\_\_\_

(Indicate the name of Bank)

**13. AFFIDAVIT**

I/We have submitted a bank guarantee for the work \_\_\_\_\_  
\_\_\_\_\_ ( Name of Work), Agreement No. \_\_\_\_\_

Dated: \_\_\_\_\_ from \_\_\_\_\_ (Name of the  
Division) with a view to seek exemption from payment of performance guarantee in cash. This Bank  
guarantee expires on \_\_\_\_\_

I/ We undertake to keep the validity of the bank guarantee intact by getting it extended from time to  
time at my/our own initiative upto a period of \_\_\_\_\_ months after the  
recorded date of completion of the work or as directed by the Engineer in charge. I/We also indemnify  
the School of Planning and Architecture, Bhopal against any losses arising out of non encashment of the  
bank guarantee if any.

(Deponent)

Signature of Contractor

Note: The affidavit is to be given by the Executants before a first class Magistrate.

**Section-6****Bill of Quantities for works (BOQ)****A. A. Preamble**

1. The Bill of Quantities shall be read in conjunction with the Instruction to Bidders, General and Special Conditions of Contract, Technical Specifications and Drawings.
2. The quantities given in the Bill of Quantities are approximate and provisional, which are given to provide a common basis for making payment for works. Actual quantities of work are likely to increase or decrease as per the requirement at site. Hence there is no claim for any additional or less quantities than the specified in the BOQ.
3. The rates in the Bill of Quantities shall, except insofar as it is otherwise provided under the Contract, include all construction plant, labour, supervision, materials, erection, transportation, maintenance, insurance, administrative overheads, profit, taxes and duties, together with all general risks, liabilities and obligations set out or implied in the Contract.
4. The Bidder shall indicate the unit rate and line total on the Total Estimate Bid Amount, which shall be applicable on each item of the Bill of Quantities, whether quantities are stated or not.
5. General directions and description of work and materials are not necessarily repeated nor summarized in the Bill of Quantities. The whole cost of complying with the provisions of the Contract shall be included in the items provided in the Bill of Quantities. References to the relevant sections of the contract documentation shall be made before entering prices against each item in the Bill of Quantities.

SPA Bhopal,

**Name of work:** Aluminium partition work in common hall at Boys Hostel II for creating workshop at SPA Bhopal.

S.No	DSR NO	Description	Unit	QTY	Rate	Amount
1	21.1	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately) :				
1.1	21.1.1	21.1.1 For fixed portion				
1.1.1		Powder coated aluminium (minimum thickness of powder coating 50 micron) <i>Note:</i> Vertical & Horizontal member of rectangular pipe section shall be used 1.89 kg/m	kg	920		
2	21.1.2	21.1.2 For shutters of doors, windows & ventilators including providing and fixing hinges/ pivots and making provision for fixing of fittings wherever required including the cost of EPDM rubber neoprene gasket required (Fittings shall be paid for separately) note:vertical & horizontal member shall be used 1.89 kg/m.				
2.1		Powder coated aluminium (minimum thickness of powder coating 50 micron) <i>Note:</i> Vertical & horizontal member of Rectangular pipe section shall be used 1.89 kg/m.	kg	110		
3	21.2	Providing and fixing 12 mm thick prelaminated particle board flat pressed three layer or graded wood particle board conforming to IS:12823 Grade 1 Type II, in panelling fixed in aluminum doors, windows shutters and partition frames with C.P. brass / stainless steel screws etc. complete as per architectural drawings and directions of engineer-in-charge				
3.1	21.2.2	Pre-laminated particle board with decorative lamination on both sides	sqm	120		
4	<b>21.3 modify</b>	Providing and fixing glazing in aluminium door, window, ventilator shutters and partitions etc. with EPDM rubber / neoprene gasket etc. complete as per the architectural drawings and the directions of engineer-in-charge . (Cost of aluminium snap beading shall be paid in basic item):				
4.1	21.3.2	21.3.2 With float glass panes of 5 mm thickness	sqm	55		
5	21.3	Providing and fixing anodised aluminium grill (anodised transparent or dyed to required shade according to IS: 1868 with minimum anodic coating of grade AC 15) of approved design/pattern, with approved standard section and fixed to the existing window frame with C.P. brass/ stainless steel screws @ 200 mm centre to centre, including cutting the grill to proper opening size for fixing and operation of handles and fixing approved anodised aluminium standard section around the opening, all complete as per requirement and direction of Engineer-in-charge. (Only weight of grill to be measured for payment).	kg	8		
6	21.13	Providing and fixing 100mm brass locks (best make of approved quality) for aluminium doors including necessary cutting and making good etc. complete.	each	6		
7	9.97	Providing and fixing aluminium tower bolts, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868 ) transparent or dyed to required colour or shade, with necessary screws etc. complete :				
7.1	9.97.1	200x10 mm	each	6		
8	9.100	Providing and fixing aluminium handles, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete :				
8.1	9.100.1	125mm	each	14		
9	9.101	Providing and fixing aluminium hanging floor door stopper, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour and shade, with necessary screws etc. complete.				
9.1	9.101.2	9.101.2 Twin rubber stopper	each	8		

10	9.96	Providing and fixing aluminium sliding door bolts, ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868), transparent or dyed to required colour or shade, with nuts and screws etc. complete :				
10.1	9.96.1	300x16 mm	each	5		
11	9.84	Providing and fixing aluminium extruded section body tubular type each 981.75 universal hydraulic door closer (having brand logo with ISI, IS : 3564, embossed on the body, door weight upto 36 kg to 80 kg and door width from 701 mm to 1000 mm), with double speed adjustment with necessary accessories and screws etc. complete.	each	5		
12	MR	Supplying & pasting of film on glass [samle got to be approved by Intitute Architect]	sqm	40		
13	N.S.	Suplying & Fixing of white colour writing board with vitreous Enamelled steel sheet top surface size 1200x2400mm.for writing purpose mounted on medium density fibre (MDF)Board with electrogalvanised backing steel sheet & frame of anodized extruded aluminium alloys hollow section .as per IS 1285-2002 OR IS 733-1983 With amdt .no 1(Refirmed 2006)edition 4.1.	each	2		
14	N.S.	Supplying & fixing of 12mm soft board including cloth mounted, Aluminium Channel framed of approved quality & Screw /Nails on the Edges & Aluminium molded corner beading of triangular shape to junction of paneling etc with iron screw, plugs fixed on aluminium section (sample got approved by Institute Architect)	sqm	40		
15	12.53	Providing and Fixing 15 mm thick densified tegular edged eco friendlylight weight calcium silicate false ceiling tiles of approved texturespintone/cosmos / Hexa or equivalent of size 595 x 595 mm in true horizontal level, suspended on inter locking metal grid of hot dippedgalvanised steel sections (galvanising @ 120 grams per sqm including both side) consisting of main "T" runner suitably spaced at joints to get required length and of size 24x38 mm made from 0.33 mm thick (minimum) sheet, spaced 1200 mm centre to centre, and cross "T" of size 24x28 mm made out of 0.33 mm (Minimum) sheet, 1200 mm long spaced between main"T" at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross "T" of length 600 mm and size 24 x28 mm made of 0.33 mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600 mm panel to from grid of size 600x600 mm, resting on periphery walls /partitions on a Perimeter wall angle pre-coated steel of size(24x24X3000 mm made of 0.40 mm thick (minimum) sheet with the help of rawl plugs at 450 mm centre to centre with 25 mm long dry wall screws @ 230 mm interval and laying 15 mm thick densified edges calicum silicate ceiling tiles of approved texture (Spintone / Cosmos/hexa) in the grid, including, cutting/ making opening for services like diffusers, grills, light fittings, fixtures, smoke detectors etc., wherever required. Main "T" runners to be suspended from ceiling using G.I. slotted cleats of size 25x35x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200 mm centre to centre along main "T" , bottom exposed with 24 mm of all T-sections shall be pre-paintedwith polyster baked paint, for all heights, as per specifications, drawings and as directed by engineer-in-charge. Note :- Only calcium silicate false ceiling area will be measured fromwall to wall. No deduction shall be made for exposed frames/opening (cut outs) having area less than 0.30 sqm.The calcium silicate ceiling tile shall have NRC value of 0.50 (Minimum), light reflection > 85%, non - combustible as per B.S. 476 part IV, 100% humidity resistance and also having thermal conductivity <0.043 w/m 0 KC.	sqm	75		
		<b>TOTAL (in figures)</b>				
		<b>TOTAL (in words)</b>				

***Note: The rate and amount for above mentioned work has to be submitted in the financial bid only (and not in the technical bid), otherwise the bid will be disqualified from participation in the financial bid.***

SPA Bhopal,

**Section-7:**  
**Technical Specifications**

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## Section-7: Technical Specifications

### PREAMBLE

1.0 The Technical Specifications contained herein shall be read in conjunction with the other Bidding Documents.

#### 1.1 Site Information General

1.1.1 The site is situated at Bhouri Village, Neelbad Road. The natural ground condition of the site has good bearing capacity with hard rocky strata.

1.1.2 The area in which the works are located is in plain terrain, the approximate longitude and latitude of the region (Bhopal) being 77° 16" East and 23° 17" North.

#### 1.1.3 Climatic Conditions

1.1.3.1 The temperature in this region is as under:

- i) During summer months, the average maximum temperature is 42°C.
- ii) During winter months, the average minimum temperature is 18°C.

1.1.3.2 The average annual rainfall in the area is of the order of 800mm.

#### 1.1.4 Seismic Zone

The works are located in Seismic Zone-II as defined in IS: 1893(Part I) - 2002

## 2 GENERAL REQUIREMENTS

The Technical Specifications in accordance with which the entire work described hereinafter shall be constructed and completed by the Contractor shall comprise of the following:

### Part-I

#### Additional conditions, additional specifications and important notes

#### “A” ADDITIONAL CONDITIONS

1. The work shall be carried out in accordance with the drawings to be issued by the Associate Dean (P&D).
2. The contractor shall maintain safe custody of materials brought to the site.
3. Some restrictions may be imposed by the security staff etc. on the working and / or movement of labour, materials etc. and the contractor shall be bound to follow all such restrictions/ instructions and nothing extra shall be payable on this account.
4. Labour will not be permitted to stay in the building under construction.
5. The contractor shall comply with proper and legal orders and directions of the local or public authority or municipality and abide by their rules and regulations and pay all fees and charges which he may be liable and nothing extra shall be payable on this account. The work shall be carried out without infringing on any of the local Municipal Bye-Laws.
6. Any damage done by the contractor to any existing work during the course of execution of work tendered for shall be made good by him at his own cost.



7. The rate for every item of work to be done under this contract shall be for all heights, depths, lengths and widths of the earthworks and nothing extra will be paid on this account.
8. The contractor shall take all precautions to avoid all accidents by exhibiting necessary caution boards such as day and night boards, speed limit boards and flags, red lights and providing barriers etc. He shall be responsible for all damages and accidents caused due to negligence on his part. No hindrance shall be caused to traffic during the execution of work. Nothing extra shall be paid on this account.
9. The contractor will work in close liaison, during the works, with other contractors of water supply, sanitary, drainage arrangements, electrical installation and any other works and adjust his work plan accordingly.
10. Other agencies doing work of electrification, external services, other building works, horticulture works etc for this project will also simultaneously execute the works and the contractor shall afford necessary facilities for the same. The contractor shall leave such necessary holes, opening etc for laying/buying in the work pipes, cables, conduits, clamps, boxes and hooks for fan clamps etc as may be required for the electric and sanitary works etc. and nothing extra over the agreement rates shall be paid for the same.
11. The contractor shall keep the site clear thoroughly of rubbish, useless scaffolding and materials etc. from time to time as well as before the actual date of completion of the work as per directions of the Associate Dean (P&D).
12. The contractor shall make his own arrangement for obtaining electric / water connections, if required and make necessary payment directly to the department concerned.
13. The contractor shall maintain in perfect condition all works executed till the completion of entire work allotted to him.
14. Materials brought at site of work shall not be used in the work before getting satisfactory test results. For details relevant provisions in C.P.W.D. Specifications for Works 2009 Vol. I to II shall be referred to.
15. The contractor shall maintain in perfect condition all works executed till the completion of entire work allotted to him.

**Associate Dean (P&D)**

Institute Works Department

SPA Bhopal

## “B” ADDITIONAL SPECIFICATIONS

### 1. GENERAL

The entire work shall in general conform to the C.P.W.D. Specifications for works 2009 Vol. Its Vol. II with correction slips issued up to date and description in the Schedule of quantities, additional conditions, particulars, specifications latest relevant Bureau of Indian Standard codes and the drawings.

All the above quoted documents shall be considered complementary to each other. However, in case of conflict among the various provisions, the following order of precedence shall be followed.

- i) Provision in nomenclature of item in schedule of quantities, including drawings if any mentioned there in
- ii) Additional Conditions.
- iii) Particulars specifications
- iv) CPWD Specifications.
- v) Latest relevant B.I.S. codes.
- vi) Drawings of the work not specifically mentioned in the nomenclature of the item and
- vii) The decision of the Associate Dean (P&D) given in writing based on sound engineering practice and local usage shall be final and binding on the contractor.

The work shall be executed and measured as per Metric Dimensions given in the schedule of quantities etc. (F.P.S. units wherever indicated are for guidance only).

- 1.1.1. Should there be any difference between the specifications mentioned above and the specifications given in the schedule of quantities, the later shall prevail.
- 1.1.2. If the specifications for any item are not available in the CPWD Specifications cited above, relevant BIS Specifications should be followed.
- 1.1.3. In case BIS Specifications are also not available, the decision of Associate Dean (P&D) given in writing based on acceptable sound engineering practice and local usage shall be final and binding on the contractor.
- 1.2. The work will be carried out in accordance with the architectural drawings and structural drawings to be issued by the Associate Dean (P&D). The structural and architectural drawings shall have to be properly correlated before executing the work.
  - 1.2.1. Incase of any difference noticed between Architectural and Structural drawings, the contractor shall obtain final decision in writing of the Associate Dean (P&D).
  - 1.2.2. In case of any discrepancy in the item given in the schedule of quantities appended with the tender and architectural drawings relating to the relevant item, former shall prevail unless otherwise given in writing by the Associate Dean (P&D)
- 1.3. For items where so desired, samples shall be prepared before starting the particular items of work for prior approval of the Associate Dean (P&D) and nothing extra shall be payable on this account.
- 1.4. Materials brought at site of work shall not be used in the work before getting satisfactory Mandatory test results. For details, relevant provisions in the CPWD specification shall be referred to.
  - 1.4.1. Wherever it is desired to procure factory-made materials, such factory-made materials shall be procured from reputed and approved manufacturers or through their authorized dealers. The contractor shall obtain the approval from the Associate Dean (P&D) of such firms prior to procurement of such factory-made materials. The Associate Dean (P&D) may, at any stage, inspect such factories/ manufacturing units. The contractor shall have no claim if the factory made materials brought to the site are rejected by the Associate Dean (P&D) in part or in full due to bad workmanship/ quality etc. even after the inspection of the manufacturing units.
  - 1.4.2. The manufactured materials brought at site of work shall, in general, conform to the relevant specifications. The source for supply of the manufactured materials shall be approved by the Associate Dean (P&D). The contractor shall have no claim if the manufactured materials brought to the site are rejected by the Associate Dean (P&D) in par tor in full due to bad workmanship/ quality etc.
  - 1.4.3. The preference amongst the various alternative materials available shall be as follows: -
    - (a) The materials shall be as per the Brand specified to be used in the work.

- (b) If the Brand specified material is not available then the material shall be ISI marked.
  - (c) If ISI marked item is not available then it should be from ISO certified Company.
  - (d) If the ISI marked or ISO certified items are not available then the best available items in the market to be procured.
- 1.4.4. Equivalents for the various materials and the materials of approved make shall be got approved from the Associate Dean (P&D) of work in writing before using them on the work.

**PARTICULAR SPECIFICATIONS**  
**&**  
**SPECIAL CONDITIONS**

**1. GENERAL**

1.1 Wherever any reference to any Indian Standard Specifications of BIS occurs in the documents relating to this contract, the same shall be inclusive of all amendments issued there-to or revisions thereof, if any, up to the date of receipt of tenders.

1.2 The contractor shall work according to the programme of work as approved by the Associate Dean (P&D), for which purpose, the contractor shall submit a programme of the work within 15 days from the stipulated date of start of the work based on computer software such as MS Project etc. and shall update the same every fortnight.

The contractor shall submit monthly progress report of the work in a computerized form. The progress report shall contain the following, apart from whatever else may be required as specified :

- (i) Project information, giving the broad features of the contract of the work under the contract, and the broad structural or other details.
- (ii) Introduction, giving a brief scope of the work under the contract, and the broad structural or other details.
- (iii) Construction schedule of the various components of the work through a bar chart for the next three quarters (or as may be specified), showing the milestones, targeted tasks and upto date progress.
- (iv) Progress chart of the various components of the work that are planned and achieved, for the month as well as cumulative upto the month, with reasons for deviations, if any, in a tubular format.
- (v) Plant and machinery statement, indicating those deployed in the work, and their working status.
- (vi) Man-power statement, indicating individually the names of all the staff deployed in the work, along with their designations.
- (vii) Financial statement, indicating the broad details of all the running account payments received upto date, such as gross value of work done, advances taken, recoveries effected, amounts withheld, net payments, details of cheque payments received, etc.
- (viii) A statement showing the extra and substituted items submitted by the contractor, and the payments received against them, items pending for sanction/decision by the Department, broad details of the Bank Guarantees, indicating clearly their validity periods, broad details of the insurance policies taken by the contractor, if any, the advances received and adjusted.
- (ix) Progress photographs, in colour, of the various items/components of the work done upto date, to indicate visually the actual progress of the work.
- (x) Quality assurance and quality control tests conducted during the month, with the results thereof.
- (xi) Videography at various stages of construction right from the day of start of work to date of completion/occupation, covering all major events, inspections, visits by dignitaries etc.

- 1.3 The contractor shall take instructions from the Associate Dean (P&D) for stacking of materials at site. No excavated earth or building materials shall be stacked on areas where the buildings, roads, services or compound walls are to be constructed.
- 1.4 If as per Municipal or prevailing rules of the secured campuses owned by paramilitary forces etc, the huts for labour are not to be erected at the site of work by the contractors, the contractors shall provide such accommodation at such locations as are acceptable to local bodies with all provisions concerning labour safety & sanitation as contained in the relevant clause of the contract, for which nothing shall be payable.
- 1.5 Unless otherwise provided in the Bill of Quantity, 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 shall be payable to him on this account.
- 1.6 The working drawings of conditions of contract shall mean to include both architectural and structural drawings respectively. The structural and architectural drawings shall be properly correlated before executing the work. In case of any difference noticed between architectural and structural drawings, final decision, in writing of the Associate Dean (P&D) shall be obtained by the contractor before proceeding further.
- 1.7 Some restrictions may be imposed by the security staff etc. on the working and for movement of labour, materials etc. The contractor shall be bound to follow all such restriction / instructions including issue of identity cards to all persons authorized by him to do work / visit the work site and nothing shall be payable on this account.
- 1.8 The contractor shall make his own arrangements for obtaining electric connections, if required, and make necessary payments directly to the department concerned.
- 1.9 The contractor shall conduct his work, so as not to interfere with or hinder the progress or completion of the work being performed by other contractor (s) or by the Associate Dean (P&D) and shall as far as possible arrange his work and shall place and dispose off the materials being used or removed, so as not to interfere with the operations of other contractors, or he shall arrange his work with that of the others in an acceptable and coordinated manner and shall perform it in proper sequence to the complete satisfaction of Associate Dean (P&D). The contractor shall be responsible for any damage due to hindrance caused by him.
- 1.10 Cast iron pipes and fittings without ear shall be used. However, pipes and fittings with ears may be accepted without any extra payment. In such cases, clamps are not required and no extra payment shall be made for fixing the pipes in a different manner.
- 1.11 Any cement slurry added over base surface for bond or for continuation of concreting, for protecting reinforcement bars, its cost shall be deemed to have been included in the respective items, unless specified otherwise and nothing extra shall be payable nor extra cement shall be considered in the cement consumption on this account.

- 1.12 Stacking of materials and excavated earth including its disposal shall be done as per the directions of the Associate Dean (P&D). Double handling of materials or excavated earth if required at any stage shall have to be done by the contractor at his own cost.
- 1.13 No claim for idle establishment & labour, machinery & equipments, tools & plants and the like, for any reason whatsoever, shall be admissible during the execution of work as well as after its completion.
- 1.14 Only Stainless Steel screws shall be used unless otherwise specified.
- 1.15 Work shall be carried out in professional manner with finished product serving the intended purpose with specified strength, durability and aesthetics.
- 1.16 Work activities shall be executed in well thought out sequences such that consequent activities not adversely affecting previously done work. Nothing extra shall be payable to protect the works already done.
- 1.17 The contractor shall prepare all the needed shop drawings well in advance and get them approved before placing the order and execution of the item.

### **ALUMINIUM WORK**

1. Aluminium sections used for fixed/openable windows, ventilators, partitions, frame work & doors etc. shall be suitable for use to meet architectural designs to relevant works and shall be subject to approval of the Associate Dean (P&D) for technical, structural, functional and visual considerations.
2. The aluminium extruded sections shall conform to IS 733 : 2008 and IS 1285 for chemical composition and mechanical properties. The stainless steel screws shall be of grade AISI 304.
3. The permissible dimensional tolerances of the extruded sections shall be as per IS 6477 and shall be such as not to impair the proper and smooth functioning / operation and appearance of door and windows.
4. Aluminium sheets for use as kick panels shall be 1.25 mm thick aluminium alloy sheet as per IS 1948 and sheet shall be as per IS 737 : 2008.
5. Aluminium alloy sheet for use in general paneling work shall be of types and thickness as specified and conforming to the requirement of IS 737 : 2008.
6. Aluminium sheets shall be of approved make and manufacturer. Aluminium panel may be prefabricated units manufactured on modular or non-modular dimension.
7. The float glass that conform to the IS 14900 : 2000.
8. Flat transparent sheet glass shall be as per IS 2835.
9. Prelaminated Particle Boards shall be as per IS 12823 :1990.

## **1 ALUMINIUM**

### **1.1 Aluminum Sections**

Aluminum sections used for partition, windows, ventilators, partitions, frame work & doors etc. shall be suitable for use to meet architectural designs to relevant works and shall be subject to approval of the Associate Dean (P&D) for technical, structural,

functional and visual considerations. The aluminum extruded sections shall conform to IS 733 and IS 1285 for chemical composition and mechanical properties. The stainless steel screws shall be of grade AISI 304. The permissible dimensional tolerances of the extruded sections shall be as per IS 6477 and shall be such as not to impair the proper and smooth functioning/operation and appearance of door and windows. Before proceeding with any fabrication work, the contractor shall prepare and submit, complete fabrication and installation drawings for each type of glazing doors, windows, ventilators and partition etc. for the approval of the Associate Dean (P&D). If the sections are varied, the contractor shall obtain prior approval, of Engineer-in-Charge and nothing extra shall be paid on this account.

Aluminum glazed doors, windows etc. shall be of sizes, sections and details as shown in the drawings.

The details shown in the drawings may be varied slightly to suit the standards adopted by the manufacturers of the aluminum work, with the approval of Associate Dean (P&D)

### 1.2 Anodizing

Standard aluminum extrusion sections are available in various shape and sizes in wide range of solid and hollow profiles with different functional shapes for architectural, structural glazing, curtain walls, doors, window & ventilators and various other purposes. The anodizing of these products is required to be done before the fabrication work by anodizing/electro coating plants which ensures uniform coating in uniform colour and shades. The extrusions are anodized up to 30 micron in different colours. The anodized extrusions are tested regularly under strict quality control adhering to Indian Standard.

### 1.3 Powder Coating

### 1.4 Performance Requirements for the Finish

**Surface appearance:** The finish on significant surfaces shall show no scratches when illuminated and is examined at an oblique angle, no blisters, craters; pinholes or scratches shall be visible from a distance of about 1 m. There shall not be any visible variation in the colour of finished surfaces of different sections and between the colours of different surfaces of same section.

**Adhesion:** When a coated test piece is tested using a spacing of 2 mm between each of the six parallel cuts (the cut is made through the full depth of powder coating so that metal surface is visible) and a piece of adhesive tape, approximately 25 mm x 150 mm approved by the Associate Dean (P&D) is applied firmly to the cut area and then removed rapidly by pulling at right angles to the test area, no pieces of the finish other than debris from the cutting operation shall be removed from the surface of the finish.

- 1.5 Protection of Powder Coated I Anodizing Finish: It is mandatory that all aluminum members shall be wrapped with self adhesive non-staining PVC tape, approved by Associate Dean (P&D).
- 1.6 Measurement: All the aluminum sections including snap beading fixed in place shall be measured in running meter along the outer periphery of composite section correct to a millimeter. The weight calculated on the basis of actual average (average of five samples) weight of composite section in kilogram correct to the second place of decimal shall be taken for payment. (Weight shall be taken after anodizing). The weight of cleat shall be added for payment. Neither any deduction nor anything extra shall be paid for skew cuts.
- 1.7 Rate: The rate shall include the cost of all the materials, labour involved in all the operations as described in nomenclature of item and particular specification-

## 2 PANELING MATERIAL

### 2.1 Pre-laminated Particle Board

A particles board laminated on both surfaces by synthetic resin impregnated base papers under heat and pressure. Pre-laminated particle boards shall be of two grades, Grade I and II corresponding to IS 3087 & 12823. Each of the grades specified shall be of four types, Types-I, II, III, and IV classified by the surface abrasion characteristics specified in Table 1. The grade and types of pre-laminated particle board shall be represented by symbols as follows:-

Grade	Type	Designation
Grade I	Type I	PLB-11
	Type II	PLB-12
	Type III	PLB-13
	Type IV	PLB-14
Grade II	Type I	PLB-21
	Type II	PLB-22
	Type III	PLB-23
	Type IV	PLB-24

TABLE 1.1 Physical and Mechanical Properties

S.N.	Properties	Flat Pressed Three Layer, Multilayer and Graded	
		Grade-I	Grade-II
i	Density variation (Max.) Percent	± 10	± 10
ii	Water absorption (Max)		
	(a) 2 hours	7.0	15.0
	(b) 24 hours	15.0	30.0
iii	Thickness swelling (Max.), percent, 2 hours	5.0	8.0
iv	Modulus of rupture (Min) N/mm		



	(a) Up to 20 mm thickness (b) Above 20 mm thickness	15.0 12.5	11.0 11.0
v	Tensile strength perpendicular to surface (Min.) N/m (a) Up to 20 mm thickness (b) Above 20 mm thickness	0.45 0.40	0.30 0.30
vi	Tensile strength perpendicular to surface (Min.) N/mm (a) After cyclic test* (b) After accelerated water resistance test**	0.20 0.15	----- -----
vii	Screw withdrawal strength (Min.), N (a) Face (b) Edge	1250 850	1250 750
viii	Abrasion resistance (Min.) in number of revolutions (a) Type I (b) Type II (c) Type III	450 250 80	450 250 80

Note:- \* Cyclic Test: Specimen are immersed in water at  $27\pm 2^{\circ}$  C for a period of 72 hours, followed by drying in air at  $27 \pm 2^{\circ}$  C for 24 hours and then heating in dry air at  $70^{\circ}$  C for 72 hours. Three such cycles are to be followed and then specimens are tested for tensile strength perpendicular to the surface.

\*\* Accelerated Water Resistance Test: Specimens are immersed in water at  $27\pm 2^{\circ}$  C and water is brought to boiling and kept at boiling temperature for two hours. Specimens are then cooled in water to  $27\pm 2^{\circ}$  C and tested for tensile strength perpendicular to the surface.

(a) Particle Board: Synthetic resin bonded flat pressed three layers; multilayer and graded particleboard defined in IS 3087 having superfine surface shall be used for production of prelaminated particle board. For ECO Marks the particle board shall also conform to the requirements of ECO Mark specified in IS 3087.

(b) Impregnated Base Paper: Printed or plain coloured absorbent base paper having a weight of 62 to 140 g/m<sup>2</sup> impregnated in a suitable synthetic resin and dried to a volatile content of 4 to 8 per cent shall be used for pre-lamination on both surfaces of particle board. 2

(c) Impregnated Overlay: An absorbent tissue, paper having a weight of 18 to 40 g/m impregnated in a suitable synthetic resin and dried to a volatile content of 4 to 8 per cent shall be used for the manufacture of pre-laminated particle board.

(d) Manufacture: Particle boards having superfine and closed surface with high face strength and steep density gradient across the thickness is used for making prelaminated particle boards. Impregnated base papers rich in a synthetic resin are placed on either side of the particle board and the assembly is taken inside a short cycle

single opening lamination press or a multi day light press. Under heat and pressure the resin flows and forms a permanent bond with particle board. The top surface of impregnated paper comes in contact with special surface chromium plates or steel caul plates and takes the impression of surface finish of these cauls. Hot boards are extracted out of the short cycle press and cooled in air, whereas cooling of boards is done inside the dress in multiday light type. Care should be taken to keep cycle times low in the press to avoid heat penetration to the centre of the board edge. The impregnated overlay paper may be used by placing it over the impregnated base paper (IBP) on one surface while using a normal IBP on the other surface and pressure. The impregnated overlay becomes transparent after pressing. Such boards are used for high surface abrasion application.

In case of finished foil particle boards, the finished foil is pasted on both surfaces of particle board after spreading suitable synthetic glue on board's surface and passing the assembly in a roller press or a flat press under the influence of pressure and/or heat depending on the type of binder used.

(e) Finish: The finish of the paper overlaid board depends on the surface of caul plates used. Common surface finishes in use are glossy, matt textured (soft, Swede, wood pore and leather), etc, the surface finish of the foil finished boards depends on the original finish of the foil used.

(f) Dimensions and Tolerances: Dimensions and tolerances shall conform to IS 12049.

(g) Testing: One sample for every 100 sqm. or part thereof shall be taken and testing done as per IS 12823. For quantity less than 100 sqm, the test certificate from manufacturer shall be relied upon. The Associate Dean (P&D) may ask for testing even if the quantity is less than 100 sqm.

## 2.2 Aluminum Sheet

(a) Aluminum Sheets for use as panels shall be 1.25 mm thick aluminum alloy sheet conforming to IS737. Aluminum alloy sheet for use in general paneling work shall be of types and thickness as specified and conforming to the requirement of IS 737. Aluminum sheets shall be of approved make and manufacturer. Aluminum panel may be prefabricated units manufactured on modular or non-modular dimension.

(b) Fixing: The required size of panel, keeping sufficient margin to be inserted inside the section, shall be cut to correct size and fixed firmly in the frame with CP brass or aluminum or stainless steel screws of star headed, counter sunk and matching size groove. Joints sealed with epoxy resin or silicon sealant to make the unit water proof.

## 2.3 Float Glass

(a) The float glass shall conform to the IS 14900. The glass shall be clear float glass and should be approved by the Engineer in Charge. It shall be clear, float transparent and free from cracks subject to allowable defects.

- (b) Thickness: The thickness of float glass shall depend on the size of panel. The tolerance in thickness shall be as under:-

TABLE 2

Nominal Thickness	Tolerance (in mm)
4.0	±0.3
5.0	±0.3
6.0	±0.3
8.0	±0.6

- (c) Allowable Defects: The allowable defects shall be as per Table.3 below:

S.N.	DEFECTS	CENTRE	OUTER	REMARKS
1	Gaseous inclusion. Max size,mm	3.0	6.0	Separated by at least 30.0 cm
2	Opaque gaseous inclusion. Max size. mm	3.0	6.0	Separated by at least 30.0 cm
3	Knots, dirt and stones, Max size. mm	1.0	1.0	Separated by at least 30.0 cm
4	Scratches, Rubs and Crush	Faint	Light	Separated by at least 30.0 cm
5	Bow, percent. Max	0.50	0.50	See 16.2.c
6	Reams, Strings and lines	Light	Light	See 16.2.d
7	Waviness	Nil	Nil	See 16.2.e
8	Sulphur stains	Nil	Nil	
9	Corner breakage and chip	Not more than nominal thickness of float glass		

- (d) Allowable Cluster of Defects: The allowable cluster of defects mentioned under SI No. 1, 2 & 3 of Table 16.3 shall be as per IS 14900.

#### 2.4 Tests

- (a) Thickness: The thickness of float glass shall be measured with micrometers or a caliper which is graduated to 0.01 mm or with a measuring instrument having an equivalent capacity.
- (b) Scratches, Rubs and Crush : Place the sample of float position approximately 50 cm from the viewer's position and look through it using either day light without direct sunlight or a background light suitable for observing each type of defect.

**Intensity of Scratches, Rubs, Crush**  
Faint

**Intensity Distance Limit**  
Shall not be detectable beyond 50 cm

Light

Detectable between 50-100 cm and not beyond 100 cm.

- (c) Bow: Depending on the side on which bow is present, stand the sample vertically on a wooden plank. Stretch a thread edge to edge. Measure the longest perpendicular. Distance from the thread to the surface of float glass facing the thread and express it as percentage of the length of float glass from edge along the thread.
- (d) Reams, Strings and Lines: Focus a light projector with a 500 W lamp and an objective lens with an Approximate 5 cm aperture and about 30 cm focal length on a flat white projection screen placed about 760 cm from the light source in a dark room. Place the float glass in a vertical position parallel to the Screen between the light and the screen. Move the glass slowly towards the screen with a vertical Oscillating motion. The shadowgraph read out is the distance at which the distortion just blends with the general shadow of the glass on the screen.

TABLE.4

Intensity of Reams, Strings and Lines	Intensity Distance Limit
Light	7.5 cm
Medium	5.0 cm
Heavy	2.5 cm

(e) Perspective Distortion: When tested as per test procedure described below it shall not give distorted vision of straight stripe pattern.

#### Test Procedure for Perspective Distortion

Perspective distortion shall be examined by looking through the specimen glass which may be placed at about 4.5 m distance in such a direction that the incident angle to it is 50 degree (4 mm or above) and by observing a screen set up perpendicularly to the line of vision about 4.5 m further ahead of the specimen over the total width of about middle part of the specimen from the horizontal direction. The specimen glass shall be kept with the drawn direction at manufacture vertical and, on the surface of the screen, the strip pattern of white and black parallel straight lines of 25 mm width and inclined 45 degrees from the vertical shall be provided and its surface shall be luster less.

#### 3 EPDM-GASKETS

The EPDM Gaskets shall be of size and profile as shown in drawings and as called for, to render the glazing, doors, windows, ventilators etc. air and water tight. Samples of gaskets shall be submitted for approval and the EPDM gasket approved by Associate Dean (P&D) shall only be used. The contractor shall submit documentary proof of using the above material in the work to the entire satisfaction of Associate Dean (P&D). The EPDM gasket shall meet the requirements as given in Table below:

S.N.	Description	Standard Follow	Specification
1	Tensile strength Kg.f/cm	ASTM-D412	70 Min.
2	Elongation at break %	ASTM-D412	250 Min.
3	Modulus 100% Kgf/cm <sup>2</sup>	ASTM-D412	22 Min.
4	Compression set % at 0° CC 22 Hrs.	ASTM-D 395	50 Max.

5	Ozone resistance	ASTM-D 1149	No visible cracks
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#### 4 SEALANT

(a) The sealants of approved grade and colour shall only be used. The silicone for perimeter joints (between Aluminum section and RCC/Stone masonry) shall be of make approved by the Engineer in Charge.

#### (b) Method of Application

Surface Preparation: Clean all joints and glazing pockets by removing all foreign matter and contaminants such as grease, oil, dust, water, frost, surface dirt, old sealants or glazing compounds and protective coatings.

#### (c) Masking

Areas adjacent to Joints shall be masked to ensure neat sealant lines. Masking tape shall not be allowed to touch clean surfaces to which the silicone sealant is to adhere. Tooling shall be completed in one continuous stroke immediately after sealant application and before a skin forms and masking shall be removed immediately after tooling.

#### (d) Application

Install backer rod of appropriate size and apply silicone sealant in a continuous operation using a positive pressure adequate to properly fill and seal the joint. The silicone sealant shall be tooled with Light pressure to spread the sealant against backing material and the joint surfaces before a skin forms; A tool with convex profile shall be used to keep the sealant within the joint. Soap or water shall not be used as a tooling aid. Remove masking tape as soon as silicone joint is tooled.

(e) Tolerance: A tolerance of + 3 mm shall be allowed in the width of silicone joints. The depth of the joints at throat shall not be less than 6 mm.

#### 5 REFLECTIVE GLASS

##### 5.1 Definitions

(i) Shading Coefficient: The shading coefficient is the ratio of total solar transmittance to the transmittance through 3.2 mm (1/8") clear glass. Windows with low shading coefficient values improve Comfort for building, lower the total cooling load of the building and help smooth out of the difference in cooling loads between perimeter & core zones.

(ii) Luminous Efficacy Constant (Ke) indicates a windows relative performance in rejecting solar heat-while transmitting day light. It is the ratio of the visible transmittance to the shading coefficient; clear glass which lets in roughly equal amounts of visible light and solar near-infrared energy has a Ke close to 1.0. The solar radiation contains about 50% invisible near-infrared & ultra violet light.

Therefore, a perfectly selective glazing, which would all allow visible light pass through while blocking all of the invisible near-infrared & ultraviolet light, would have  $K_e$  of about 2.0.

- (iii) Resistance to Heat Conduction (R-value): It is a measure of resistance to heat flow that occurs because of temperature difference between the two sides of the windows. The inverse of R-value is termed as U-value.

## 5.2 Reflective Glass

This is an ordinary float glass with a metallic coat to reduce solar heat. Clear glass transmits most of the sunlight that shines upon it, and most of the solar heat as well; the metallic coated glass i.e. reflective glass has better shading coefficients because they reflect rather than absorb infrared energy. However, most of reflective glazing blocks day light more than solar heat.

### (a) Types of Coatings:

(i) Pyrolytic (Hard) coated: It is a coating applied during glass manufacture. The coating is fused into the glass at 1200°C.

(ii) Vacuum (Soft) Coated Glass: It involves the deposition of metal particles on the glass surface by a chain reaction in a vacuum vessel. It is often called a soft coat; because the coating is more susceptible to damage than hard coat glass. Where toughening of product is required, the product must be toughened first & then vacuum coated. Vacuum coated products have better shading coefficient values than pyrolytic products.

- (b) Performance of Reflective Glass: The performance of reflective glass 6 mm of nominal thickness is given below:

S.N.	Parameter	Threshold Ratio In %age
1	Visible Light :- -Transmittance (%) -Reflectance (%)	15-46 12-24
2	Total Solar Energy:- -Transmittance (%) -Reflectance (%)	16-24 8-12
3	Ultra Violet Rays; - -Transmittance (%)	2-10
4	U-Value -Summer -Winter	0.58 0.45
5	Shading Coefficient	0.25-0.35

- (c) Testing: The reflective glass shall be tested for the followings:

- (i) Physical/Field Test: In a true reflective glass, when a pointed pencil is placed, then tip of pencil (physical) & image should coincide.
- (ii) Lab. Test: In the lab, the reflective glass shall be tested for the parameter specified in para 5.2.b above.

(d) Fixing of glass shall be done as specified.

## 5.6 DOOR, WINDOW, VENTILATOR AND PARTITION FRAMES

### 5.6.1 Framework

First of all the shop drawings for each type of doors/windows/ventilators etc. (Showing full size sections of glazed doors, windows, ventilators etc) shall be prepared. The shop drawings shall also show the details of fittings, Joints and prepared by using suitable sections based on architectural drawings, adequate to meet the requirement/ specifications and by taking into consideration varying profiles of aluminum sections being extruded by approved manufacturers. Before start of the work, all the shop drawings shall be got approved from the Associate Dean (P&D).

Before fabrication actual measurement of openings left at site for different type of door/window etc. shall be taken. The fabrication of the individual door/windows /ventilators etc. shall be done as per the actual sizes of the opening left at site. The frames shall be truly rectangular and flat with regular shape corners fabricated to true right angles. The frames shall be fabricated out of section which have been cut to length, mitered and jointed mechanically using appropriate machines. Mitered Joints shall be corner crimped or fixed with self tapping stainless steel screws using extruded aluminum cleats of required length and profile. All aluminum work shall provide for replacing damaged/broken glass panes without having to remove or damage any member of exterior finishing material.

### 5.6.2 Fixing of Frames

The holes in concrete/masonry/wood/any other members for fixing anchor bolts/fasteners/screws shall be drilled with suitable electric drill. Windows/doors /ventilators etc. shall be placed in correct final position in the opening and fixed to Sal wood backing using stainless steel screws of star headed. Counter sunk and matching size groove, of required size at spacing not more than 25cm c/c or dash fastener. All joints shall be sealed with approved silicone sealants.

In the case of composite windows and doors, the different units are to be assembled first. The assembled composite units shall be checked for line, level and plumb before final fixing is done. Associate Dean (P&D) in his sole discretion may allow the units to be assembled in their final location if the situation so warrants. Snap headings and EPDM gasket shall be fixed as per the detail shown in the approved shop drawings. Where aluminum comes into contact with stone masonry, brick work, concrete, plaster or dissimilar metal, it shall be coated with an approved insulation lacquer, paint or plastic tape to save from electrochemical corrosion is, insulation material shall be trimmed off, to a clean flush line on completion.

The contractor shall be responsible for the doors, windows etc. being set straight, plumb, level and for their satisfactory operation after fixing is complete.

### 5.6.3 Measurements

All the aluminum sections including snap headings fixed in place shall be measured in running meter along the outer periphery of composite section correct to a millimeter. The weight calculated on the basis of actual average (average of five samples) weight of composite section in kilogram correct to the second place of decimal shall be taken for payment (weight shall be taken after anodizing). The weight of cleat shall be added for payment. Neither any deduction nor anything extra shall be paid for skew cuts.

### 5.6.4 Rate

The rate shall include the cost of all the materials, labour involved in all the operations as described in nomenclature of item and particular specification.

## 6 DOOR, WINDOWS AND VENTILATOR SHUTTERS

Material, fabrication and dimensions of aluminum doors, windows and ventilators manufactured from extruded aluminum alloy sections of standard sizes and designs complete with fittings, ready for being fixed into the building shall be as per IS 1948.

### 6.1 Terminology

The components of doors, windows and ventilators shall be refer as per CPWD Specification Vol-2

Terminology for Aluminum Doors, Windows and Ventilators shall be refer as CPWD Specification Vol-2

### 6.2 Standard Sizes, Tolerances and Designations

Doors and side lights shall only be coupled with 12 module (117.5cm) high windows.

### 6.3 Tolerances

The sizes for doors, windows and ventilators frames shall not vary by more than  $\pm 1.5$  mm.

### 6.4 Glass Panels

Glass panels shall weigh at least 7.5 kg/m and shall be free from flaws, specks or bubbles. All panels shall have properly squared corners and straight edges. The sizes of



glass panels for use in doors, windows and ventilators shall be Refer as per CPWD SPECIFICATION VOL-2

#### 6.5 Screws

Screws threads of machine screws used in the fabrication of aluminium doors, windows and ventilators shall conform to IS 1362

#### 6.6 Fabrication

Frames: Frames shall be square and flat, the corners of the frame being fabricated to a true right angle. Both the fixed and opening frames shall be constructed of sections which have been cut to length, mitered and welded at the corners. Where hollow sections are used with welded joints, argon-arc welding or flash butt welding shall be employed (gas welding or brazing not to be done). Subdividing bars of units shall be tenoned and riveted into the frame-

#### 6.7 Side-hung Shutters

For fixing aluminum alloy hinges, slots shall be cut in the fixed frame and the hinges inserted inside and may be riveted to the frame. The hinges shall normally be of the projecting type 67 mm wide (FIG-3). The aluminum alloy for cast hinges shall conform to IS Designation A-5-M of IS 617. Specification for Aluminum and Aluminum Alloy Ingots and Castings for General Engineering Purpose and for extruded section of hinges to IS Designation HE10-WP or HE30-WP of IS 733. The pins for hinges shall be of stainless steel of non-magnetic type or aluminum alloy HR30. Irrespective of hinges being anodized or not, the aluminum alloy pins shall be anodized to a minimum film thickness of 0.025 mm shall be sealed with oil, wax or lanolin. Non-projecting types of hinges may also be used where ever required. (FIG-4). Friction hinges may be provided for side-hung shutter windows, in which case peg stay may not be required. The working principle of the friction hinges is illustrated. (FIG-5).

The handle for side-hung shutters shall be of cast aluminum conforming to IS Designation A-5-M of IS 617 and mounted on a handle plate welded or riveted to the opening frame in such a way that it could be fixed before the shutter is glazed. The handle should have anodized finish with minimum anodic film thickness of 0.015 mm. The handle shall have a two points nose which shall engage with an aluminum striking plate on the fixed frame in a slightly open position as well as in a fast position (FIG-6). The height of the handles in each type of side-hung shutters shall be fixed in approximate position as indicated.

The peg stay shall be either of cast aluminum conforming to IS 617 or folded from IS Designation N84 aluminum alloy sheet conforming to IS: 737 specifications for wrought aluminum and aluminum alloys, Sheet and strip. It shall be 300 mm long, complete with peg and locking brackets (Fig. D). The stay shall have holes for keeping the shutter open in three different positions. The peg and locking bracket shall be riveted or welded to the fixed frame.

Alternatively, and if specifically required by the purchaser, side-hung shutters may be fitted with an internal removable fly screen of 0.375 mm wire and equivalent to IS Sieve 100 in a 0.900 mm aluminum alloy sheet conforming to IS Designation NS3-1/2H of IS 737 applied to the outer frame of the shutter by case or extruded aluminum alloy turn-buckle at the jambs and by aluminum or plated bronze shoes at the sill to allow of the screen being readily removed, and with a rotor operator at the sill to permit the operation of the shutter through an angle of 90°. On fly-screened shutters the peg stay is omitted and the normal handle

The aluminum hinges for top-hung ventilators shall be either cast or fabricated out of extruded sections and shall be riveted to the fixed rail after cutting a slot in it. The aluminum alloy for cast hinges shall conform to IS Designation A-5-M of IS 617 and the extruded section of hinge to IS Designation HE10-

The pegs stay shall be 300 mm long as in side-hung shutter, The locking bracket shall be fixed to the fixed frame.

6.8 Centre-Hung Ventilators Centre hung ventilators shall be hung on two pairs of cup pivots of aluminum alloy to IS Designation NS-4 of IS 737 and IS Designation A-5-M of IS 617 or on brass or bronze cup pivots which should be either chromium or cadmium plated and riveted to the inner and outer frames of the ventilators to permit the ventilator to swing through an angle of approximately 85°. The opening portion of the ventilator shall be so balanced that it remains open at any desired angle under normal weather condition.

Cast aluminum conforming to IS Designation A-5-M of IS 617 or bronze which shall be either Chromium-plated or cadmium-plated spring catch shall be fitted in the centre of the top bar of the Ventilators for the operation of the ventilator. This spring catch shall be secured to the frame and shall Close into aluminum catch plate riveted or welded to the outside of the outer ventilator frame bar.

Aluminum or cadmium plated brass cord pulley-wheel in an aluminum bracket shall be fitted at the sill of the ventilator with aluminum or galvanized or cadmium plated steel screw or, alternatively, welded together with an aluminum cord eye riveted or welded to the bottom inner frame bar of the ventilator in a position corresponding to that of pulley.

#### 6.9 Doors

The outer fixed frame shall be of section A1-FX8. The shutter frame shall be of either hollow sections

A1-HFX5 and A1-HFX6.

The kick panels shall be of 1.25 mm aluminum alloy sheet conforming to IS Designation NS3-1/2H of IS 737 specification for Wrought Aluminum and Aluminum Alloys, Sheet and strip and shall be screwed to the frame and the glazing bar.

Hinges -Cast of extruded aluminum alloy hinges for doors shall be of the same type as in the windows but of larger size. The hinges shall normally be of the 50 mm projecting type . Non-projecting type of hinges may also be used.

The handle for doors may be of the design indicated in.  
A suitable lock for the door operable either from inside or outside shall be provided.

Note: From the point of view of security, the lock which is operable from only one side is better and in the case of such locks, a bolt shall be provided to make them inoperable from the other side.

#### Typical Door Handle

In double shutter doors the first closing shutter shall have a concealed aluminum alloy bolt at top and bottom. It shall be so constructed as not to work loose or drop by its own weight. Single and double shutter doors may be provided with a three-way bolting device Where this is provided in the case of double shutter door, concealed aluminum bolts may not be provided.

#### 6.10 Composite Units

The doors shall be coupled to windows or side-lights by extruded aluminum sections made from aluminum alloy conforming to IS Designation HE9-WP of IS 733. The coupling member should conform to the dimensions indicated in Fig. refer CPWD Specification VOL-2

#### 6.11 Weather Bar

Where a coupling member is fitted over an external opening shutter, the coupling member should Incorporate an integrally extruded weather bar.

#### 6.12 Position of Bolts, Fixing Screws and Lugs

Outer frames shall be provided with fixing holes centrally in the web of the sections in the position Moreover, any steel lugs coming in contact with aluminum should be either galvanized or given one coat of bituminous paint.

The fixing screws and lugs shall be as given in Table.7

S.N.	Place of fixing	Size of screw or lug
i	To wooden frames rebated on the outside	30 mm x No. 10 galvanized wood-screws.
ii	) To plugs in concrete, stone or brick work rebated on the outside	-Do-
iii	To plugs in concrete, stone or brick work not rebated on the outside (that is plain or square jambs)	45 mm X No. galvanized wood-screws
iv	Direct to brick work or masonry (that is plain or square jambs)	Slotted steel adjustable lugs (natural finish) or square jambs) not less than 100 x 16 x 3 mm countersunk galvanized machine screws and nuts 19,0 X 6.3 mm
v	To steel work	Standard clips and 8 mm galvanized bolts with hexagonal nuts

### 6.13 Finish

Aluminum doors, windows and ventilators may be supplied in either matt, scratch-brush or polished finish. They may, additionally, also be anodized, if so required by the Associate Dean (P&D). If colour anodizing is to be done then only approved light-fast shades should be used. A thick layer of clear transparent lacquer based on methacrylates or cellulose butyrate, shall be applied on aluminum doors, windows and ventilators by the supplier to protect the surface from wet cement during installation. This lacquer coating shall be removed after installation is completed.

### 6.14 Glazing

Glazing shall be provided on the outside of the frames. If required, glazing clips may be provided as extra fittings. Four glazing clips may be provided per glass pane, except for door type 8HS21 where the glazing clips shall be six per glass pane. In case of doors, windows and ventilators without horizontal glazing bars the glazing clips shall be spaced according to the slots in the vertical members, otherwise the spacing shall be 30 cm.

Note: Glazing clips are not usually provided for normal size glass panes. Where large size glass panes are required to be used or where the door or the window is located in heavily exposed situation, holes for glazing clips have to be drilled prior to fabrication and cannot be done at any later stage. Use of glazing clips, where necessary, shall be specified while placing the order.

### 6.15 Packing

All doors, windows and ventilators shall be dispatched with the opening parts suitably secured to preserve alignment when fixing and glazing. Fixing lugs, coupling fittings and all hardware shall be dispatched separately. Composite windows shall be dispatched uncoupled.

### 6.16 Marking

All doors, windows and ventilators shall be suitably marked on the frames with a mark identifying the manufacturer and the type. The units may also be marked with the BIS Certification Mark.

## 7 FITTINGS

### 7.1 Stainless Steel Friction Stay

The stainless steel friction stays of make and approved by the Associate Dean (P&D) shall be used. These stays shall be of grade AISI-304 and of sizes specified in nomenclature of item.

### 7.2 Lockable Handles

The lockable handle shall be of make and approved by the Associate Dean (P&D) and of required colour to match the colour of powder coated /anodized aluminum window sections.

### 7.3 Hydraulic Floor Spring

The hydraulic floor spring shall be heavy duty double action floor spring of make approved by the Associate Dean (P&D) suitable for door leaf of weight minimum 100 kg. The top cover plate shall be of stainless steel, flushing with floor finish level. The contractor shall cut the floor properly with stonecutting machine to exact size & shape. The spindle of suitable length to accommodate the floor finish shall be used. The contractor shall give the guarantee duly supported by the company for proper functioning of floor spring at least for 10 years.

### 7.4 Tubular Handle

The tubular handle bar shall be aluminum polyester powder coated minimum 50 micron to required colour/anodized AC 15. Outer dia of tube shall be 32 mm, tube thickness 3.0 mm and centre to centre length 2115 mm  $\pm$  5 mm.

### 7.5 Measurement

Refer Para 6.3.

### 7.6 Rate

Refer Para 6.4.

## 8 LOUVERS

Aluminum extruded sections (anodized or power coated) are used for providing Louvers in aluminum door, window & partition for ventilation.

### 8.1 Fabrication

Refer Para 6.1.

### 8.2 Measurements

Refer Para 6.3.

### 8.3 Rate

Refer para 6.4.

## 9 HERMETICALLY SEALED UNIT

Insulating glass shall be a double glazed unit comprising two sheet Insulating glass shall be a double glazed unit comprising two sheets of float glass panes separated by a spacer, hermetically sealed using primary and secondary sealants. The design of insulating glass system shall consist of:

(a) Hollow Spacer Bar

The hollow aluminum spacer bar shall be of required size and shape and shall be colour anodized. The spacer bar shall have two lines of perforations in the inner surface.

(b) Desiccant

The desiccant shall be Neftomol 3 A Chemetall or equivalent. The desiccant filled in the aluminum spacer bar shall be synthesized crystalline compounds of Aluminum Hydroxide, Caustic Soda and Sodium Silicate which absorbs water molecules. The desiccant shall be of 3 A sizes (A means Angstrom). The quantity of desiccant used shall not be less than 35 gm/m length of spacer bar. Filled spacer bar frame shall not be stored for more than 6 hours before assembly and sealing of the unit to ensure proper functioning of the desiccant. The contractor shall submit documentary proof of using the above material in the work.

(c) Primary Sealant

The primary sealant shall be single component approved by the Engineer in Charge, thermo plastic solvent free sealing compound based on polysutylene. The sealant surface shall be free from cavities, depression and other defects. The contractor shall submit documentary proof of using the above material in this work.

(d) Secondary Sealant

The secondary sealant in double glazed unit shall be silicone sealant approved by the Engineer in Charge. The contractor shall submit documentary proof of using the above material in this work to the entire satisfaction of Associate Dean (P&D). Before application of silicone/ polysulphide, the surface must be cleaned and free from oil, grease, dust and other loose matter. The surfaces shall be cleaned with alcohol or other suitable solvents. Detergent or soap shall not be used to clean the surfaces. The polysulphide shall be mixed and applied mechanically using automatic mixing machine in the manner approved by Associate Dean (P&D).

Measurement

The height and width of double glazed/single glazed unit (the area of glass unit outside the snap beading shall only be measured) as fixed in place shall be measured correct to one centimeter and area calculated in sqm. correct to second place of decimal shall be taken for payment.

Rate

The rate shall include the cost of all the materials, labors involved in all the operations as described in nomenclature of item and particular specification.

11 BRASS LOCK

This should generally conform to IS-2209. The size of the lock shall be denoted by the length of the body towards the face and it shall be 100 mm. the measured length shall not vary more than 3 mm from the specified length. Ordinary lever mechanism with not less than 2 levers shall be provided. False lever shall not be used. Lever shall be fitted with one spring of phosphor-bronze or steel wire and shall withstand the test as provided in IS-2209. Locking-bolt spring and strike plate shall conform to IS 2209. Two keys shall be provided with each lock.

**LIST OF BUREAU OF INDIAN STANDARD (BIS) CODES**

S.NO.	IS CODE	SUBJECT
1	IS 733	Wrought Aluminum and Aluminum Alloys, Bars, Rods and Sections (For General Engineering Purposes) Specification
2	IS 737	Wrought Aluminum and Aluminum alloy sheet and strip for general engineering purposes -Specification
3	IS 1285	Wrought Aluminum and Aluminum Alloy, Extruded Round Tube and Hollow sections (For General Engineering Purposes) - Specification
4	IS 1868	Anodic coating on Aluminum and its Alloys-Specification
5	IS 1948	Specification for Aluminum Doors, Windows and Ventilators
6	IS 3908	Specification for Aluminum. equal leg angles
7	IS 3909	Specification for Aluminum unequal leg angles
8	IS 3965	Dimensions for wrought Aluminum and Aluminum Alloys bars, rods and sections.
9	IS 5523	Method of testing anodic coating on aluminum and its alloys.
10	IS 6012	Measurement of coating thickness by Eddy Current Method
11	IS 6315	Floor springs (Hydraulically regulated) for heavy doors-Specifications
12	IS 6477	Dimensions of extruded hollow section and tolerances
13	IS 12823	Wood products- Pre-laminated particle board -Specifications
14	IS 14900	Transparent Float glass- Specifications.

**List of approved makes**

1	Aluminium Composite Panel	Alpolic, Aluco Bond, Reynobond, Euro bond, Al-strong
2	Aluminium Extrusions	Hindalco, Indalco, Jindal
3	Aluminum Sections	Jindal, Hindalco, Indalco
4	Annealed Float Glass	Saint Gobain, Modi Guard, Hindustan Pilkington
5	Float Glass	Modi Float, Saint Gobain, Asahi, Sejal
6	Hydraulic Door Closer	Hardwyn, Godrej or equivalent.
7	Pre-laminated Particle Board	Novapan, Eco, Kitlam or equivalent.

Associate Dean (P&D)  
Institute Works Department  
SPA Bhopal  
or his authorized representative with Seal

