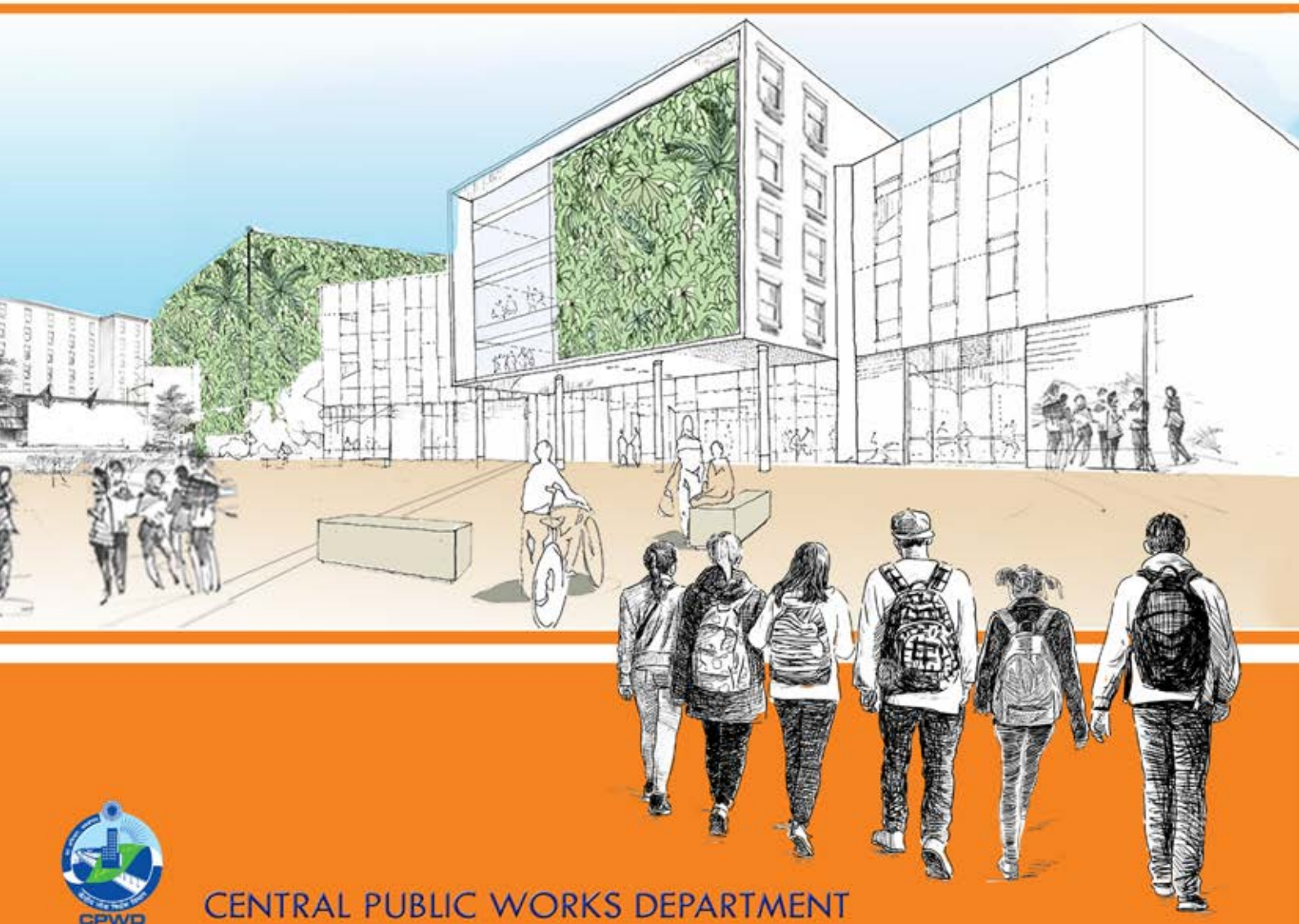
150 YEARS OF CELEBRATING THE MAHATMA

सत्यमेव जयते

स्वच्छ भारत
एक कदम स्वच्छता की ओर

Compendium of Architectural Norms & Guidelines for Educational Institutions



CPWD

CENTRAL PUBLIC WORKS DEPARTMENT

सत्यमेव जयते

Compendium of Architectural Norms & Guidelines for **Educational Institutions**

CENTRAL PUBLIC WORKS DEPARTMENT

Nirman Bhawan, New Delhi-110011

PRABHAKAR SINGH
Director General

सत्यमेव जयते

भारत सरकार
Government of India

CPWD

केन्द्रीय लोक निर्माण विभाग
निर्माण भवन, नई दिल्ली-110011

Central Public Works Department
Nirman Bhawan, New Delhi-110011
Tel : 23062556/1317, Fax : 23061884
E-mail : cpwd_dgw@nic.in

FOREWORD

In today's competitive world of construction, streamlining and compilation of voluminous data as a ready reckoneris an important parameter of success of an Engineering organisation. CPWD, a premier Engineering Organization of Government of India and being at the epitome in designing and construction, is involved in the planning, design and construction of premier educational institutions of the country like, IITs, NITs, IIMs, Central Universities and Schools etc.

A good amount of time is consumed in studying guidelines from different applicable norms and acts. Many times case studies are also undertaken for better understanding of the project. A need was therefore felt, to have readily available compendium of architectural norms and guidelines for educational institutions.

I am happy to note that CPWD is bringing out this useful compendium of architectural data as a ready reckoner for Architecture and Engineering professionals. This compendium on educational norms shall give a general idea of the requirements of various types of educational institutions, applicable norms of various educational regulatory bodies and parameters for designing of educational buildings and campuses in various geographical regions.

I am sure this compendium shall also benefit the Client Departments in framing their requirements.

I congratulate Dr. Sonia Mehta, Chief Architect and her team for publication of this useful compendium in a very short time.

Place: New Delhi
Dated: July 2019

(Prabhakar Singh)

DR. SONIA MEHTA
Chief Architect (NDR)

सत्यमेव जयते

डा. सोनिया मेहता
मुख्य वास्तुक (न.दि.क्षे.)
केन्द्रीय लोक निर्माण विभाग
कमरा न.– 318, 'ए' विंग
निर्माण भवन, नई दिल्ली–110011
दूरभाश–011–23061774, फैक्स–011.23061396
ईमेल– ca-ndr.cpwd@nic.in

PREFACE

CPWD is venturing into unchartered areas. Major educational campuses is one of them. The Department has been retained by some of the new coming up IITs and IIMs. We have also been engaged by Jawaharlal Nehru University for their Engineering and Management Departments. Being a less traversed area, designers and field units of the Department shall need to have access to the prevalent norms and specifications being followed by other operating agencies, as there are no set Departmental norms in the context.

In the present 'Compendium of Norms and Guidelines for Educational Institutions', an effort has been made to put all such important norms and specifications concerning Education Campuses at one place. This will avoid the tiresome search online or otherwise to collect such information. It not only contains norms for main institute buildings but also for hostels, libraries, auditorium, residential quarters etc. forming part of the campus. Such information at one place will obviously help the planners to choose from.

Overall it is hoped that availability of information at one place will lead to an increase in efficiency of the Department. Needless to say, they are only for reference and the individual sources can be referred to in case of any clarification. Quite a bit of effort has gone into collecting collating and presenting the norms and specifications. Each and every member of the team (details available at the end of Compendium) has tirelessly contributed to make it possible within the timelines set for the purpose.

It is hoped, that users will give feedback on the various aspects of the compendium so that in due course it can be modified for maximum utility.

Place: New Delhi
Dated: July 2019

(Dr. Sonia Mehta)
Chief Architect

CONTENTS

CONTENTS

1. Kendriya Vidyalaya School Details

A. Land requirement for new school:

S. No	Location	Requirement of land (Acres)
1	Metropolitan City	04
2	Hilly Areas	08
3	Urban Area	08
4	Semi-Urban/ Rural Areas	10

1.1 REQUIREMENTS WITH RESPECT TO LAND

The following conditions should be satisfied in respect of the land

2.1.1 The land on which the school is located should necessarily be a contiguous single plot of land. If there are more than two survey numbers etc, all the survey numbers/plots should be adjacent/ touching each other and shall make a single plot of land on the whole.

2.1.2 A suitable building should be constructed on a part of the land and mentioned in 2.1.1 above.

2.1.3 A proper playground should exist on the remaining part of the land mentioned in2.1.1 above.

2.1.4 Other facilities as prescribed by the Board from time to time should exist on a part of the land mentioned in 2.1.1 above

2.1.5 The land mentioned in 2.1.1 above should be surrounded on all sides bya pucca boundary wall of sufficient and adequate height.

1.2 The school affiliated or seeking affiliation with the Board shall have a minimum of 8000 square meters of land in general subject to the restriction of optimum enrolment and number of sections given in Appendix-I.

1.3 The school not fulfilling the minimum requirement of 8000 square meters but having land not less than 6000 square meters may be granted affiliation subject to the restriction of optimum enrolment and number of sections given in Appendix-I

1.4 The land requirement will be of minimum 4000 square meters in case of the following, subject to the restriction of optimum enrolment and number of sections given in Appendix-I:

1.4.1 School located in limits of Municipal Authorities of cities with a population exceeding 15 Lakhs.

1.4.2 School located in hilly areas. The norms as prescribed by the Planning Commission (NITI Aayog) shall be applicable for determining the hilly areas.

1.4.3 Schools located within the limits of municipal authorities of the state capital cities.

1.4.4 Schools located in the North Eastern States

1.4.6 Schools located within the limits of Municipal Authorities of Ghaziabad. NOIDA, Faridabad and Gurugram cities only of National Capital Region.

1.4.7 Schools located within the limits of Municipal Authorities of Panchkula (Haryana) and Mohali/SAS Nagar (Punjab). the satellite cities of Chandigarh.

1.5 For the schools located within the limits of municipal Authority of the cities classified as class –X (At present Ahmedabad, Bangalore, Hyderabad and Pune) by the Government of India the minimum land requirement will be 2000 square meters for a Secondary School and 3000 (or 4000) square for a Senior Secondary School subject to the restriction of optimum enrolment and number of sections given in Appendix-I.

1.6 For the schools mentioned in sub-clauses to this clause, the minimum land requirement will be 1600 square meters for a secondary school and 2400 (or 3200) square meters for a senior secondary school subject to the restriction of optimum enrolment and number of sections given in Appendix-I.

1.6.1 For the schools located in the limits of Municipal Authorities of 4 metropolitan citiesof Chennai, Delhi, Kolkata and Mumbai.

1.6.2 For the schools located in the state of Arunachal Pradesh.

1.6.3 For the schools located in the state of Sikkim.

1.6.4 For the schools located on the Islands.

1.7 For the schools situated on the Hill Stations, the minimum land requirement will be 2000 square meters for a Secondary School and 3000 (or 4000) square meters for a Senior Secondary School subject to the restriction of optimum enrolment and number of sections given in Appendix-I:

1.7.1 The institution should have an arrangement for sports and extracurricular activities with the nearby schools/colleges or any other institution for a minimum period of 15 years.

1.7.2 In case the arrangement in respect of 1.7.1 is with a private institution, a copy of the resolution passed by the management of the institution at its managing committee meeting may also be submitted to the Board.

1.7.3 In case the arrangement in respect of 1.7.1 is with a government institution, a copy of the letter issued by the head of such institution may also be submitted to the Board.

1 7.4 The number of students should be restricted in such institutions on the basis of constructed covered area of school building by following the norms of 1 sq mtr. floor area per child.

B. SPACE NORMS for KENDRIYA VIDYALAYA SCHOOLS:

S. No.	Description	No. of rooms and size required as per KVS space norms							
		A-I Type (single section)		A-Type (two section)		B-Type (three section)		C-Type (four section)	
		Nos	size in mts	Nos	size in mts	Nos	size in mts	Nos	size in mts
1	Computer Lab	1	7.00 x 7.00	2	7.00 x 10.60	3	7.00 x 10.60	3	7.00 x 10.60
2	Labs	3	7.00 x 8.80 7.00 x 3.60	3	7.00 x .8.80 7.00 x 3.60	3	7.00 x .8.80 7.00 x 3.60	3	7.00 x 8.80 7.00 x 3.60
3	Jr. Sci. Lab	…	…	…	…	1	7.00 x 10.60	1	7.00 x 10.60
4	Social Sci/Geo/ Resource room (Primary)	1	7.00 x 3.40	1	7.00 x 3.40	1	7.00 x 3.40	1	7.00 x 3.40
5	Social Sci/Geo/ Resource room (H/Secondary)	1	7.00 x 3.40	1	7.00 x 7.00	1	7.00 x 7.00	1	7.00 x 7.00
6	Activity room	1	7.00 x 10.60	1	7.00 x 10.60	1	7.00 x 10.60	1	7.00 x 10.60
7	Art room	1	7.00 x 7.00	1	7.00 x 10.60	1	7.00 x 10.60	1	7.00 x 10.60
8	SUPW/ Workshop	1	7.00 x 7.00	1	7.00 x 10.60	1	7.00 x 10.60	1	7.00 x 10.60
9	Library	1	7.00 x 10.60	1	7.00 x 14.20	1	7.00 x 17.30	1	7.00 x 21.40
10	Maths Lab	1	7.00 x 7.00	1	7.00 x 7.00	1	7.00 x 7.00	1	7.00 x 7.00
11	Principal room	1	7.00 x 7.00	1	7.00 x 7.00	1	7.00 x 7.00	1	7.00 x 7.00
12	Office	1	7.00 x 7.00	1	7.00 x 7.00	1	7.00 x 7.00	1	7.00 x 7.00
13	Staff common room	1	7.00 x 7.00	1	7.00 x 7.00	1	7.00 x 8.80	1	7.00 x 10.60
14	Vice-Principal room	…	…	…	…	1	3.40 x 3.40	1	3.40 x 3.40
15	Head Master/ Head Mistress room	…	…	1	7.00 x 3.40	1	7.00 x 3.40	1	7.00 x 3.40
16	Exam. Room	1	7.00 x 3.40	1	7.00 x 3.40	1	7.00 x 3.40	1	7.00 x 3.40
17	NCC/Scout/ Guide room	1	7.00 x 3.40	1	7.00 x 7.00	1	7.00 x 7.00	1	7.00 x 7.00
18	PET room	1	7.00 x 3.40	1	7.00 x 7.00	1	7.00 x 7.00	1	7.00 x 7.00
19	Gen. store	1	7.00 x 3.40	1	7.00 x 7.00	1	7.00 x 7.00	1	7.00 x 7.00
20	Medical room	1	7.00 x 3.40	1	7.00 x 3.40	1	7.00 x 3.40	1	7.00 x 3.40
21	Class room	12	7.00 X 7.00	24	7.00 X 7.00	36	7.00 X 7.00	48	7.00 X 7.00

C. PHYSICAL INFRASTRUCTURE

The school seeking Affiliation must satisfy the following conditions:

3.1 Class Rooms – Minimum size should be 8 m. x 6 m. (approximately 500 Sq/ ft). There should be one room for each class. Minimum floor space should be at least1 sqmtr. per student.

3.2 Science Laboratory - (Composite for Secondary or/and separate Physics,Chemistry and Biology for Senior Secondary)- minimum size should be 9 m. x 6 m. each (approximately 600 sq. ft) and should be fully equipped.

3.3 Library

3.3.1 Minimum size should be 14 m. x 8 m. fully equipped and with, reading room facility and other resources to cater to the strength of students in the school.

3.3.2 The Library should have sufficient number of age appropriate books on all subjects in its stock.

3.3.3 Books should include e-Books, Fiction, Non-fiction, Reference books Encyclopedias, Periodicals, and Magazines. Journals and Newspapers Staff and students should be encouraged to read e-magazines, e-journals e-books etc.

3.3.4 The Library shall not contain any book or other forms of literature that espouse or propagate communal disharmony or casteism or discrimination based on religion, region or language etc. The school should not stock in the library any book disapproved by the Govt/ Board.

3 .4 Computer Laboratory

Minimum size of computer laboratory should be 9 m x 6 m each (approx 600 sq ft.).

3.4.1 The School should have a minimum of 20 computers and computer to student ratio of 1:20.

3.4.2 The School should have Internet connectivity with good speed.

3.4.3 There should be minimum one lab if the school strength of students in the school is up to 800. For every additional (up to) 800 students one more lab willbe required.

3.4.4 If the school is offering any subject related to computer science or IT at senior secondary level, it should have a separate laboratory with adequate provisions for the same.

3.4.5 There should adequate provisions related to cyber safety in the computer laboratory and students should be allowed in the laboratory under the supervision of a teacher only.

3.5 Mathematics Laboratory –The School should have separate provision for mathematics laboratory, at least of the size of a regular class room.

3.6 Rooms for extracurricular activities- either separate rooms for music, dance arts & sports etc. or one multipurpose hall of adequate size for all these activity.

3.7 Drinking water, Toilets and other Physical Facilities.

3.7.1 The School will provide adequate facilities for potable drinking water on each floor.

3.7.2 The School will provide clean healthy and hygienic toilets on each floor with washing facilities for boys and girls separately in proportion to the number of students. The toilets for the primary students should be separate from other toilets. There should be separate toilets for staff members. Signage boards should be displayed prominently on the toilets of all categories.

3.7.3 The School shall provide proper facilities like, ramps in toilets and at entry/exit points for wheelchair users and auditory signals in elevators/lifts in accordance with the provisions laid down in RPWD Act-2016.

3.7.4 The School should have suitable furniture in the class rooms commensurate with the strength of students and staff.

3.7.5 The school should have the needed equipment and facilities as per the syllabus prescribed for Sciences, Home Science, Technical subjects Vocational subjects and various activities under work experience and art education etc.

3.7.6 The school shall follow the guidelines related to the safety of the children in schools contained in the following:

- The guidelines issued by the Hon'ble Supreme Court of India in Writ Petition (Civil) no. 483 of 2004 in the matter of Avinash Mehrotra (Petitioner) Versus Union of India & Others (Respondents) (Appendix-II)
- The Guidelines on School Safety Policy, 2016 issued by the National Disaster Management Authority which is statutory in nature.
- Manual on Safety and Security of Children in Schools Developed by National Commission for Protection of Child Rights.
- National Building Code-2005, as amended from time to time.

3.7.7 The School should scrupulously observe prescription from the State Government/Municipal Authority/Transport Department regarding health & hygiene, drinking water, fire safety. building safety and transport precautions in the school.

3.7.8 The School should have adequate facilities for providing recreation activities and physical education as well as for conduct of various activities and programs for developmental education and for the social, cultural and moral development of the students and for safeguarding their health.

3.7.9 PLAY GROUND

Adequate ground to create outdoor facilities for at least 200 meter Athletics Track.

Facilities for Kabbadi, Kho-Kho, Volleyball, and basketballetc.

Appendix-I

S. No.	Location of School	Campus area	Affiliation allowed	Optimum No. of sections (From classes I/VI to X/XI)
A	Areas/cities mentioned in clause 1.6	1600 sqm	Up to Class X only	10
B	Areas/cities mentioned in clause 1.6	2400 sqm	Up to Class XII	24
C	Areas/cities mentioned in clause 1.6	3200 sqm	Up to Class XII	28
D	Class X cities (Clauses 1.5) and Areas mentioned in Clause 2.7	2000 sqm	Up to Class X only	10
E	Class X cities (Clauses 1.5) and Areas mentioned in Clause 2.7	3000 sqm	Up to Class XII	24
F	Class X cities (Clauses 1.5) and Areas mentioned in Clause 1.7 and Areas/cities mentioned in clause 1.4	4000 sqm	Up to Class XII	28
G	Pan India (Clause 1.3)	6000 sqm	Up to Class XII	38
H	Pan India (Clause 1.2)	8000 sqm	Up to Class XII	48
I	Pan India (Clause 1.2)	>8000 sqm	Up to Class-XII The number of sections shall be restricted in accordance with 'H' above with lad requirement unit scaled to 2000 sqm i.e.12 sections for every2000 sqm additional land.	

Appendix-II

The Hon'ble Supreme Court of India, Justice Dalveer Singh in response to writ petition (Civil) no. 483 of 2004, Avinash Mehrotra Vs Union of India has laid down following minimum specifications for school buildings.

i. The school buildings shall preferably be a 'A' class construction with brick/ stone masonry walls with RCC roofing. Where it is not possible to provide RCC roofing only non- combustible fireproof, heat resistance materials should be used.

ii. The nursery and elementary schools should be housed in single storied buildings and the maximum number of floors in school buildings shall be restricted to three including the ground floor.

iii. The school building shall be free from inflammable and toxic materials, which if necessary, should be stored away from the school building.

iv. The staircase, which act as exits or escape routes, shall adhere to provisions specified in the National Building Code of India 2005 to ensure quick evacuation of children.

v. The orientation of the buildings shall be in such a way that proper air circulation and lighting is available with open space all round the building as far as possible.

vi. Existing school buildings shall be provided with additional doors in the main entrances as well as the class rooms if required. The size of the main exit and class room doors shall be enlarged if found inadequate.

vii. School buildings have to be insured against fire and natural calamities with Group Insurance of school pupils.

viii. Kitchen and other activities involving use of fire shall be carried out in a secure and safe location away from the main school building.

ix. All schools shall have water storage tanks.

BRIEF SPECIFICATIONS FOR KENDRIYA VIDYALAYA SCHOOL BUILDINGS

FOUNDATIONS

- Bearing capicty10 tonnes / Sqmt.
- Type-Spread foundation-isolated / combined.
- Depth – up to 1.20 mts below ground level

SUPERSTRUCTURES

- R.C.C Framed construction with filter walls in Brick work or load bearing construction in brick / stone masonry with intermediate columns wherever found necessary.
- Internal partition in brick Masonry.
- R.C.C Chajjas, fins, jails etc.

REMARKS

- The design foundation / superstructure shall strictly be subject to soil investigation report of the particular site and incorporating necessary provision for earth quake resistance as per I.S. codes.

DOOR & WINDOWS

- Frames of 2nd class Indian teakwood or equivalent or T-Iron frame, pressed steel frame as per CPWD specifications.
- Door shutters – Panelled type in 2nd class teakwood or flush door with commercial ply as per CPWD specifications.
- Window shutters – 2nd class Indian teakwood or steel windows.
- The size of glass panels shall be minimum so that replacement of broken ones becomes easy.

- Fittings – Anodized.
- Aluminium or equivalent.

FLOORING

- Main entrance halls, stair case, lavatory blocks-in situ mosaic / Kota stone or equivalent.
- Rest of the area including class rooms ordinary cement concrete (IPS Floor)
- Principal Room- Glazed ceramic tiles of CPWD approved brand.

ROOFING

- Filling for drainage line concrete finish with brick tiles.
- Water proofing treatment – 4 course treatment finished with brick tiles or any other specifications as adopted for Govt. buildings locally.
- Additional Data / Fitting & Fixtures For School Buildings of KendriyaVidyalayas

I	Class Rooms			
		Flooring	-	KOTA or equivalent where kota is not available
		Wall & ceiling	-	White wash
		Black Board	-	3.00 Mts x 1.40 Mts (Cement concrete)
		Cup Board	-	1 No. with C.C racks and Black Board Shutter upto lintel level
		Fans	-	5 Nos (56) including one above teacher
		Tube Lights	-	5Nos. including one above teacher / black board (Single fitting ordinary Hanging type)
		Power Point	-	01 No.
		Pin-up Board	-	As shown in drawing

Note:-

i. Raised platform for teaching shall not be provided.

ii. Switch Boards /M.C.Bs should be covered in box and shall be provided at lintel level.

I. (a) Primary Class Room

i. Left hand side of the wall with reference to entry to the class room shall have a two tier shelve with height up to window sill level. Sliding shutter with locks shall be provided.

ii. The wall opposite black board, up to window sill level shall be finished properly with green paint and preferably with a band of 2" of yellow colour, so that student can draw figures, sketch etc,

(b) Labs:-

- Requirement of Fans/Tube lights shall be worked out on proportionate basis.
- For chemistry Lab, R.C.C. Demo. Tables as per KVS layout shall be provided. In other Labs, Tables are not required.
- Acid proof tiles shall be provided on tables and top of side racks (Chemistry Lab)

- Adequate no. of exhaust fans shall be provided.
- Groove for Gas pipe line shall be made in the floor. The gas connection, including laying of gas pipe line shall be got done by Principal though Govt. Oil companies like HPCL/BPCL/TOC. However on request of Principal gas chamber of required size outside the building shall be constructed as per specifications of oil companies.
- Water supply shall be provided as per requirement.
    - Drainage in the form of covered drain shall be provided.
    - Provision of Chemistry Lab. Should be made in ground floor only.
    - Required number of power points shall be provided in each Lab,

III. Principal Room :-

- Attached toilet shall be provided.
- Flooring shall be Glazed ceramic Tiles

Office / Staff Room	-	Built in storage shelves on wall sides with shutters
Exam. Room / Store	-	shall be provided as per the pattern, length
NCC Room	-	height, decided as per architectural drawings
P.E.T. Room	-	The . wall between two adjacent rooms ie. Activity, SUPW Rooms etc. Activity/SUPW/Art and a class room or similar size room
Activity/SUPW Rooms etc	-	shall be provided with movable partition for cultural, curriculum activities etc.

IV. Computer Room :-

- PVC. Flooring shall be provided.
- Power points for P.Cs shall be provided as per requirement of Principal.
- Provision for Air Conditioners in window and power points shall be provided. However Air Conditioner shall not be provided,
- Aluminum double door shall be provided for entry door.

V. Toilets:

- Adequate no. of W.C., Urinals partitions wash basins etc. shall be provided as per ISI yard sticks.
- No lipped Urinals shall be provided in Boys toilets. Instead a half glazed channel with partitions shall be provided. However squatting plates shall be provided in Girls Toilets.
- Provision of one bath room shall be made in each toilet.
- Exhaust fans shall be provided.

- White glazed tiles of 900 mm height in W.C. room and 1800 mm height in the rest of the walls.

VI. Corridors / Stair Cases:-

- All corridors / stair cases shall be laid with Kota stone slabs or equivalent.
- Mumpty room for stair case to make access to roof top shall be provided.

VII. General

- Aluminum door with collapsible shutter shall be provided at the entry of the building.
- For safety precautions all openings, electrical panels, proper enclosures / grills shall be provided.
- Plinth protection around building with plinth drain connecting the main drains in the campus shall be provided. Similarly proper drainage arrangement in the open spaces inside / outside of the building shall also be made so that water do not stagnate in the campus causing hardship to students while play and movement etc.
- Only L.T. connection shall be taken as far as possible in order to avoid huge recurring expenditure on electricity bills.
- Cycle/Scooter stand for 100 /200 nos. with simple truss and A.C. sheet roofing shall be provided close to boundary wall near left hand side of main gate (only simple specifications).
- Canteen (Kiosk Type) without sitting space but with cooking, storage and service counter facilities shall be provided at a suitable place in the campus go that entry of outsiders could be restricted.
- Boundary wall for school plot shall be provided. As per KVS norms the height should be 5' - 6" including grill, however, wherever safety problems are there on the written request of Principal, the height shall be increased to 6' including grill. Grill shall be provided only on front side and other sides barbed wire instead of grill shall be provided. :
- The width of road from gate to main entry of school building shall be 6.00 Mts. All other internal roads 4 paths shall be minimum width and as per requirement, however economic and functional layout of internal roads / paths to connect various facilities shall be developed.
- Corner lights at ail building corners and street lights parallel to roads / paths shall be provided for proper watch and ward.
- Sign Board (painted - Not neon) of required size shall be provided at the main gate.
- Cooler spaces with glazed tiles and water supply arrangement and drainage shall be provided at suitable places in the school building as decided by Architect. These spaces shall not be too close to toilets. Coolers shall not be provided.

- In the campus, drinking water troughs shall be provided at suitable locations and play areas (Minimum - 2, Maximum - subject to requirement and availability of space / land).
- At least one power point shall be provided in all Admn. / Service - Support rooms.
- Width of corridor shall be 1800 mm for singly loaded and 2100 mm for doubly loaded.
- In the academic related rooms(except class room) glass or equivalent writing boards shall be provided
- Ramp with suitable width and gradient to all floors, shall be provided as per standards.
- All open drains shall be covered with pre-cost slabs for student safety and also ease of maintenance.
- All input materials to be used shall be cost effective and durable. However locally available material/specifications shall be adopted as decided by the Architect to economies in cost.
- Availability of potable water shall be clearly ascertained. Provision for tube well, U/G sump of adequate capacity, pumps (both submersible/ boosters). Pump House etc. shall be taken in the estimate, furnish cost of each component separately, Alternate water supply connection from local Authorities shall also be taken as standby arrangement.
- Electric load requirement shall be properly calculated and provision for transformer, laying cables, payment to be made to local Elect. Board etc. shall be included.
- In case of Defence Sector, paramilitary forces Kendriya Vidyalayas water and electricity are to be provided by the sponsoring authority of prescribed rates as per MoD/MHA guidelines. This aspect should be explored through Principal first.
- While developing master plan clear boundaries of KV. plot/ plots, proposed facilities viz. School building (making provision to further expansion to next higher type), residential area showing no, of blocks, play fields, cycle stand, canteen, drinking water facilities services, roads/paths drainage, septic tank, soak pit, water supply like tube well, pump house etc. shall be clearly shown, so that over all development is made in planned way,
- Provision for fire fighting for school building as per bye-laws and NBC guidelines and bye laws of local Fire Services Department shall be made and water harvesting system for structure shall be explored and provided wherever feasible. ,
- While planning school building, guidelines and space standards for barrier free built environment for disabled and elderly persons issued by CPWD shail be kept in view and minimum provisions be incorporated.

- CRZ/AAT guidelines shall be followed while developing the drawings.
- National Building Code shall be kept in view while developing the drawings.
- All mandatory approvals shall be taken before start/completion of work. Copies of all approvals including two sets of all drawings (Architectural, structural, services (Civil/Elect) duly approved by local bodies shall be handed over to Principal for his/her record and further reference.
- Being 'Deposit Work' it is the responsibility of construction agency to obtain all mandatory approvals before start/after completion of work. However Principal will sign the application papers required and extend help/co-operation in this regard.
- While planning and designing buildings, standard engineers practice should be followed so that the buildings so constructed shall be functioned incurring minimum capital outlay.
- Economy should be given due consideration at design stage in view of increasing construction cost.
- Play facilities, site development work shall be provided by taking vast advantage of terrain, so as to ensure minimum cutting/filling is involved. The possibilities of stilt level planning shall be explored in hilly terrains. Proper drainage arrangement shall also be made.
- Ensure designed planning efficiency (ratio of carpet area to plinth area) is achieved.
- Green building parameters shall be adopted.
- Proposed school building shall match and blend with local architecture of the area.
- The building shall be aesthetically pleasing and look like educational building.
- Local climatic conditions should be considered in order to provide building with thermal contort and energy efficient/economy.
- Use of solar energy in the campus shall be explored for lighting of important places to save electrical energy, besides being a demonstration for students of the vidyalaya.
- A cattle catcher shall be provided at the entrance gate.
- In typical site conditions, requirement of fitting/fixtures shall be provided to suit the local site conditions.
- A raised platform/stage for functions, with tubular truss and sheet roofing shall be provided at suitable location.
- Assembly area for accommodating at least 1000-2000 depending upon requirement of school shall be provided in front of stage.

- A Flag post shall be provided.
- All Switch Boards/MCBs etc. shall be provided at lintel level covered in boxes with lock/key facility. Similarly wherever Electric Main Boards are there in the building or in the campus, the same shall be coved with wire mesh frames and doors.
- Subject to availability of adequate land, school 'building shall be planned adopting singly loaded to reduce noise levels/disturbance.
- Height of the room (Floor to ceiling) shall be kept 3500 mtr or as per site requirement and specifications of CPWD/MES.
- Wet areas in school building shall be kept away within the building to prevent seepage in adjacent rooms and foul smell etc.
- Proper location of Tube Well, Pump House, Sump, Septic Tank, elect. Transformer etc. shall be decided go that these will not create safety hazards and become obstruction for future expansion of building and other facilities.
- Demarcation walls of low height (about 30-45 ems) with light weight grill (about 60 cms) or wire mesh in order to demarcate various areas and facilities shall be provided.
- A raised platform or stage with tabular truss and GI/AC sheet roof shall be provided for conducting Annual Day / Cultural Activities etc.
- A sentry post of 1.80 X 1.80 Mtrs. shall be provided at entrance gate.
- Garbage Bing of suitable size at proper locations shall be provided.
- In-corporate plantation scheme, parks and other horticulture works in the campus in the master plan. However, this will be developed by the Vidyalaya.
- The plinth level of the building should be kept at least | $ feet higher than the existing level of outside road with the consideration of economy. The campus drainage system be made effective to avoid stagnation of water.
- Proper location shall be earmarked for residential purpose subject to availability of land, In the master plan provision for Type-II, Type-III and Type IV shall be made. The requirement of quarters subject to specific demand projected by KVS shall be as under :

Types	Phase-I	Phase-II	Phase-III	Remarks
Type-I	01	01	NIL	
Type-II	01	01	Actual requirement	Cycle shed / scooter shed / garage with servant quarter with main unit shall be provided as per norms for each unit
Type-III	04	04	Actual Requirement	
Type-IV	04	02	-DO-	
Type-V	01	NIL	NIL	
	11	10		

However in the master two more blocks each of Type-II & Type-III for Ph-III shall be incorporated.

The Quarters shall be planned as per approved plinth areas of Ministry of Urban Development (CPWDB) / Ministry of Defense (MES).

- Sports facilities to be earmarked in the land available with K.V.

  a. **Primary :** Play areas with parks open spaces Hear primary block for play equipment's like: Plain slides, wave slides, swings, see-saw, Horizontal ladders, rings, grand slide, climbing apparatus, Merry-go-round etc. However equipment shall not be provided.

  b. **Middle and Senior Secondary :** Hockey field, athletic track with football field, Cricket pitch Volley ball court, basket bail court, Badminton court, Gymnastics area etc.

STANDARDS FOR PUBLIC SANITARY CONVENIENCES

SCHOOLS

Fitments	For Boys	For Girls
W.C	1 per 40	1 per 25
Urinals	1 per 20	…..
Wash Basins	1 per 40	1 per 40
Drinking Water fountain	1 per 50 or part there of	

	For Males	For Females
W.C	1 per 25	1 per 15
Urinals	nil upto 6	
	1 per 7 to 20	
	2 per 21 to 45	
	3 per 46 to 70	
	4 per 71 to 100	
	For 101-200 add @ rate of 3%	
	For over 200 add @ rate of 2.5 %	
	Wash Basins 1 for 25 or part thereof (M/F)	
	Drinking water fountain – 1 per every 100 persons with Minimum of one on each floor	

NOTE:-

- A ratio of 60 (Boys): 40 (Girls) of total planned strength of vidyalaya shall be taken into consideration.
- Separate toilets for staff (Gents & Ladies) shall-be provided.
- Toilet for differently abled person (Boys, Girls, Gents, and Ladies) with necessary fitting/ Fixtures shall be provided as per standards.

Checklist for approval of preliminary drawings for construction of school building with/or /without staff quarters

Name of KV: ……

Type of school Building (Tick) –

- A-l (Single mearlonsplintt area 2640 sqint) in normal cases (480 students)
- A (two section - plinth area 4200 sqmt} in normal cases (960 students}
- B (three section - plinth area $560 sqm) in normal cases (1440 students)
- C (four section — plinth area 6660 sqmt) in normal cases (1920 students)

Agency:----------

S. No.	Description	To be ensured by Architect	Remarks of Architect
1.	No. of rooms conforming to KVS space norms	Conforming to KVS space norms/ Few rooms not conforming to KVS space norms, but are functional (give reasons in remarks col)	
2.	Size of rooms conforming to KV Space norms	Conforming to KVS space norms/ Few rooms not conforming to KVS space norms, but are functional (give reasons in remarks col)	
3.	Plinth Area	As per KVS norms / Higher than KVS space norms (give reasons in remarks col)	
4.	Provision of cement concrete black board in classrooms	To be made	
5.	Provision of glass 'equivalent' writing board in other academic related rooms (except classrooms)	To be made	
6.	Provision of built-in cup board with shutters upto lintel level and pin up boards in classrooms	To be made	
7.	Provision of built-in cup board with shutters upto lintel in others room	To be made	
8.	Brief Specification of the project	As per KVS / CPWD & soil report or as per KVS / MES & soil report (details to be furnished)	
9.	Detail of fitting / fixtures	As per CPWD/KVS or MES/KVS (details to be furnished)	
10.	Layout of labs with specifications as per KVS space norms	To be developed as per KVS norms	
11.	Ramp to all floors for differently abled persons and children	To be provided as per yardsticks	
12.	Toilet in ground floor for differently abled children	To be provided as per yardsticks	

S. No.	Description	To be ensured by Architect	Remarks of Architect
13.	Drawings with future expansion of school building to next higher category showing required number of rooms in line plan/ additions/notifications in dotted lines	To be developed accordingly	
14.	In layout plan provision is made for (subject to extent of land transferred to KV)	To be made	
	Drinking Water kiosks in the campus at suitable locations	To be made	
	Cycle / scooter shed for 100 nos	To be made	
	Canteen (size as per KVS norms)	To be made	
	Watchman cabin		
	Sports facilities – for primary children as per KVS nrms and hockey, athletic track (200/300 mts). Foot ball, badminton, gyms, area for h/s students	To be made/partly/made as land is not adequate	
15.	Provision of 24 nos (minimum) (for A-I, 'A' 'B') and 30 nos. (minimum) (for 'C' type) power points and one extra point for teacher, in each computer room	To be made	
16.	Whether filling required	If yes, please show the location with dimensions in drawings mentioning existing GL, Formation level and depth of filling	
17.	Provisions of rain water harvesting fire fighting and other mandatory requirements / provisions	To be made necessary approvals from concerned authorities to be taken before taking up the work and after completion	
18.	Layout/ Premilinary drawings developed as per local bye-laws and national building code/AAI/ CRZ/ASI/NDMA regulations etc	Drawings to be developed as per mandatory bye-laws, Necessary approvals to be taken from concerned authorities before taking up the work and after completion	
19.	Toilets for boys/girls/staff adequately provided at suitable locations in the building as per standards (Boys 60% girls 40% ratio no. of students)	Drawing to be developed with adequate numbers as per standards	

S. No.	Description	To be ensured by Architect	Remarks of Architect
20.	Segregation of wet areas / toilet blocks from walls of main building to prevent seepage	To be planned accordingly / not possible (give reasons)	
21.	Attached toilet to principal room and medical room provided	Drawings to be eloped accordingly.	
22.	Cooler spaces (inside building at suitable locations provided)	Drawings to be developed accordingly	
23.	Plinth area of staff quarters as per CPWD / MES yardsticks	Plinth area to be per yardsticks of CPWD/ MES	
24.	Exclusive location of staff quarters including future requirement , open area for get together / functions etc with low height wall separating school area	To be incorporated	
25.	Provisions of cycle shed/ scooter shed / garage for various types of staff quarters	To be made	
26.	Any other required provisions made as per architectural consideration	To be indicated , if any and incorporated	
27.	Any other provisions made as per by-laws and mandatory requirements	To be indicated if any and incorporated	
28.	Provisions of assembly hard standing for 480/960/1440/1920 students made with covered stage	To be made at suitable location	
29.	Provisions internal switch boards / M.C.B etc at lintel level only.	To be ensured	
30.	Width of corridors in school buildings	Min 1800 mm for singly loaded Min 2100 mm for doubly loaded	
31.	Explore possibility of singly loaded corridors	Possiblity to be explored school building fully singly loaded corridor / partly singly loaded corridors.	
32.	Proposed plinth level of buildings	Higher than G.L of existing outside road / H.F.L of the place / at par with recently constructed Government building in the vicinity (to be justified) However minimum plinth height 450 mm from formation level.	
33.	Requirement of retaining wall / protective measures	Not require / incorporated in drawings	

S. No.	Description	To be ensured by Architect	Remarks of Architect
34.	Provisions of exhaust fans, wherever necessary and security lights on building corners made	Provisions to be made in detailed drawings	
35.	Provisions of separated toilets for staff gents / ladies including one each toilet for differently abled persons	To be made	
36.	Clear demarcation of plot boundaries shown in the layout plan as per survey plan after physical verification in presence of principal and sponsors and also incorporating existing features (i.e structures, elec. Lines, trees etc. (if any) including contours. According to verified physical boundaries, proposed boundary wall shall be incorporated	Layout plan/ to be developed accordingly	

Note :-

(*) ~ Local bylaws and National Codes are final and are to followed wherever Contradictions observed above.

Signature of Architect-
of const. agency

Signature of Competent Technical Authority

Source : https://kvsangathan.nic.in/sites/default/files/land16.PDFPage 2 to 15 Of Guidelines For Planning and Construction of School Buildings of KVS (Revised -2013)

CHEMISTRY LAB SPECIFICATIONS

(A) PHYSICAL FACILITIES

S. No	ITEM / FACILITY	SPECIFICATIONS/USAGE
	Standard room size/dimensions	Lab size with capacity to accommodate a group of 26 students for classes Xi and XII.
	Store	Must have sufficient number of cupboards as per plan Of the lab and number of students.
	Teachers room (study)	For teachers to study and keep records and books well equipped with cupboard and furniture.
	Light	Laboratory must receive ample day light in order to make the observation etc. of the experiments visible and to avoid any accident.
	Design of students shelf	Must be arranged in such a manner so that teacher can address/monitor more number of students at a time. WORKTOP; Marble Plate or Ceramic Plate not only resist strong acid and alkali, but also resist scratch ,fading, ageing, high temperature below(1200c) and stain resistant. Its height to be comfortable to manage the experimental work. Attached with small cupboards to keep necessary equipments etc. with easily cleanable sinks and water supply. Ample space must be free for students to move. Proper drainage with covered dustbins below each shelf .
	Lab Stools	Should be of suitable height to provide ample leg space under the shelf and should have broad leg area to provide more stability.
	Floor	Floor with non-skid tiling resist strong acid and alkali, but also resist scratch, fading, ageing and strain resistant. it is free from solvent and non-toxic
	Demonstration shelf	It must be slightly higher in height than routine student's working shelf. Furniture for better monitoring and demonstration. WORKTOP: marble plate or ceramic plate not only resist strong acid and alkali, but also resist scratch, fading, ageing, high temperature (below 1200c) and strain resistant. Attached with drawers on both sides to keep teaching martial such as chalks, markers, dusters, CDs, etc. Cupboards on both sides to keep dissection boxes and microscopes etc. with easily cleanable sink and water supply. Proper drainage with covered dustbins below the shelf fitted with water supply. Lab should be equipped with computers along with internet.

S. No	ITEM / FACILITY	SPECIFICATIONS/USAGE
	Power supply	Regular power supply with sufficient number of power points around side shelves. Separate power supply for fans and tube lights.
	Water supply	Lab should be equipped with computers along with internet. 9 Power supply / Regular power supply with sufficient number of power points around side shelves.
	Fire extinguisher	At least one meant for all types of fires.
	Exhaust and ventilators	Exhaust: minimum two which can be increased as per the volume of the lab Ventilators: for maximum light and may be used as innovative fume hoods.
	Interactive boards	Interactive visual board located at suitable height to be easily visible by the students.
	Mini subject library	Must be maintained so that students may be refer to the books of their taste. Must include reference books, journals, magazines on science not ices of various Olympiads
	Gas supply	Installation of gas plant for regular supply of gas through Bunsen gas burners on working shelves.
	Display boards (covered)	Minimum two in number. One fixed outside the tab to display articles related to chemistry/science and other fixed inside the tab to display information related to practical's the number can be increased depending upon the availability.
	First aid kit	A first aid kit with Silverex and mild antiseptic cream.

(B) EQUIPMENT

	Apparatus	Must have sufficient number of apparatus as per CBSE syllabus of XI and XII Practical/Activities/Demo experiments so that each student gets independent set of apparatus.
	Personal Computer	Should be of latest configuration, preferably with Internet connection and a printer.
	LCD Projector	Suitably positioned so that the projection is visible to all and easy to manage by the teacher .it should be used in removable mode to avoid effects of fumes .
	Refrigerator	One in number for temperature based experiments..
	Things to be displayed	Safety in lab, first aid , plan and execution of practical work.
	Oven	One in number for temperature based experiments.
	Digital balance	One in number to prepare standard reagents for experiments.
	Distillation plant	One in number for experimental work in Lab.

(C) Usability/Usage

1.	Practical	The Syllabi allocated should be divided judiciously term wise.
2.	Conduct of projects	Projects must emphasize creativity and originality. Selection of projects should be from the list of projects given by CBSE or any equivalent investigatory project.
3.	Demonstrations	The syllabi should be supplemented with demonstration/activities Videos available on **www.youtube.com** can also give additional edge to teaching..
4.	Workshops / Seminars	Workshops/Seminars should be conducted in the school.
5.	Science Exhibition	Vidyalaya level, Cluster level, Regional level, National level .
6.	Public Demonstration	Once in a week in morning assembly (alternately chemistry, physics and biology).

D) KEEPING YOUR LAB FUNCTIONAL

S. No	Item/Facility	Up Keeping.
1.	Maintenance of Equipment	The equipment must be maintained functional and necessary repair work. whenever needed must be carried out periodically.
2.	Fire Extinguisher	Must be refilled time to time and pressure gauge should be checked periodically.
3.	Electrical Maintenance	Power points should be checked for any naked wire ,switch failure, non functionality etc. Check exhaust fans and tube lights regularly.
4.	Gas Maintenance	Gas pipes, Gas burners and Gas taps should be checked for any gas leakage and non functionality of burners.
5.	Stock Verification	Must be done regularly at year end to have check on articles.
6.	Condemnation	Non functional equipment due to regular wear and tear or time should be condemned yearly.
7.	Procurement	The equipment condemned or needed as per changes in syllabi must be procured immediately.

Source : Page 3 to 4 of Benchmarking of Chemistry Laboratory by Kendriya Vidyalaya Sankathan

2. Space Norms for Navodaya Vidyalaya

Introduction

Jawahar Navodaya Vidyalayas are planned to have an identity exclusive to their function; that of a hallowed seat of learning. These are residential schools resembling traditional "Gurukulas", to which the student develop an inherent and strong sense of belonging and pride.

Infrastructure

The Jawahar Navodaya Vidaylayas have school buildings, boys & girls hostels, dining and kitchen facility, residences for faculty and staff with ample open spaces for playing and recreation. A Smriti Van in the memory of late Sh. Rajiv Gandhi, former Prime Minister of India, is an integral part of all the Navodaya Vidayalaya campuses. For hilly areas, where the School building and dormitory blocks with a Central courtyard cannot be accommodated, modular design is adopted. These buildings are made double-storied to optimize the cost of construction. In various zones of the country, materials and specifications are adopted as per CPWD, local availability. Specific provisions are being made for building in the earthquake zones. All new JNV buildings are equipped with fire safety measures and provisions for physically challenged.

Design Concept

General

The built form of Jawahar Navodaya Vidyalayas is simple low profile, and vernacular so as not to appear alien and forbidding in its surroundings. The emphasis is not on the physical form but on its overall relationship with its setting, which is natural and quaint, in keeping with its predominantly rural set-up and an ambience which merges well with the surroundings. All buildings are single/double-storeyed for the ease of construction and user friendliness. For varying and topographical regions, different variation of designs with different roof forms and building materials are adopted.

The School

The school building provides 18 classrooms, 3 laboratories, a computer room, a library, display areas, administrative and staff rooms. Each classroom accommodates 40 students. Four(Two each) separate sets of toilets for boys and girls are provided. The entrance of the school building is given an attractive form. The entry extends on to a platform, which acts as a stage during assembly. The central courtyard acts as assembly ground.

The Hostels

The full strength of Jawahar Navodaya Vidyalaya is 560 students with hostel facility for all. In a residential school, the students are expected to learn living habits with self-sufficiency, discipline, dignity of labour and sharing attitude. Their living accommodation should, therefore, induce the right atmosphere besides providing natural light, ventilation, physical and visual spaciousness. The tropical climatic

conditions in our country are an important consideration in the design of the hostel. The children do not face the space constraints in hostel. Neither a strong pattern alien to their life style is imposed on them. That is why the physical form of the hostel is kept simple but highly efficient from functional point of view. There are 6 hostels, each accommodating 96 students, 4 for boys and 2 for girls. In case the requirement of hostels for Girl students occurs, additional hostel for girls is constructed additionally. Hostels also have accommodation for two house-master (one for 48 students)

Staff Residences

Principal's residence of size 186 sq.mtrs. (Tpye-V) & Vice Principal's residence of size 121 sqm. is placed at a vantage location in the layout of buildings for effective control. There are 18 residences of 80 sq.mtrs. each for teachers, 12 nos. residences of 80 sqm. each for Warden, 13 Nos residences to 70 sq.mtrs. each for administrative staff and supporting staff. Guest House of plinth Area 80 sqm. is also constructed in the Vidaylaya Campus)

Kitchen and Dining Hall

A spacious dining hall for 560 students along with kitchen measuring 758 sqm. is provided where all students can take food at a time.

Services

These include Electric substation, under ground sump of 1.00 lac ltrs. capacity, roads internal & pathways, sewerage, water supply, storm water drain., play field of dimension 190m x 110m having a 400 meters running track, two kho-kho grounds (one each for Boys & girls) of size 40m x 30m and two basket ball courts of size 40m x 30m.

Facility for Physical Handicapped Students

All newly constructed JNVs have basic and essential required facilities like barrier free ramp and toilets for physically handicapped students. However, some of the JNVs constructed on old CBRI pattern have also been extended this facilities through a special drive to make them disabled friendly in tune with the Govt's initiative to promote inclusive Education in the schools so that physical mobility is not a constraint in pursuit of formal school education among such children.

Construction-Phasing of JNV Buildings

Phase-A (Total Plinth area of building constructed is 7660 sqm)

1. School Building-consisting of 18 Classrooms, Library, Principal & Vice-Principal rooms, Staff rooms, Science laboratories, Computer Laboratory, Medical room etc.
2. Dormitory (1 Block – 96 students with 2 Nos. warden residences):
    a. Boys – 2 Blocks (for 192 Students)
    b. Girls - 1 Block (for 96 Students)

3. Staff Quarters: Total 23 staff qtrs. Are constructed

a. Type-V – Principal Residence – 1 No

b. Type-III – 14 Nos. including 6 Nos. Warden residences constructed along with the dormitories.

c. Type-II 8 Nos. for non-teaching staff

4. Kitchen & Dining Hall

5. Development Works: Construction Boundary Wall (2.6 m high), Water supply including RCC underground sump of one lakh litres capacity, Sewerage system, CC Internal road and pathway, external electrification, sub stations etc.

6. Play field: (Total 05 nos.)

   a. One play field of size 190 mtrs.X 110 mtrs. (having 400m/200m track)

   b. Two Kho-Kho ground of 40 mtrs. X 30 mtrs. (Boys and Girls)

   c. Two basketball courts of 40 mtrs. X 30 mtrs. (Boys and Girls)

7. Rainwater Harvesting Systems

Phase-B (Total Plinth area of buildings constructed is 3459 sqm)

1. Dormitory (1 Block – 96 students) with 2 Nos. Warden residences):

   a. Boys-1 Block (For 96 students)

   b. b) Girls-1 Block (For 96 students)

2. Staff Quarters: Total 23 staff qtrs. are constructed

   a. Type-IV- Vice Principal residence – 1 no.

   b. Type-III – 14 Nos. including 4 Nos. Warden residences constructed along with the dormitories.

   c. Type-III- Guest House – 1 no

   d. Type-II 5 Nos. for non-teaching staff

3. Development Works: As associated with the building in Phase – B

Phase-B (Balance)

   1. Dormitory: Are constructed as per the student's strength of Boys & Girls students. Provision in the Master Plan is considered as below:

      a. Boys-1 Block (For 96 students)

      a. Girls-1 Block (For 96 students)

   2. Development Works: As associated with the building in Phase – B(Bal.)

Source : https://navodaya.gov.in/nvs/en/Construction/Construction-Activities/

3. Guidelines for School Infrastructure and Strengthening (Civil Works)

1. RMSA programme has provision for infrastructure support to enhance the access and to provide enabling condition for quality education. Infrastructure support can accordingly be classified in to 5 categories:

   - Opening of new secondary schools or up gradation of upper primary schools to the secondary stage. This would include class rooms with furniture, library, Integrated Laboratory, Computer room, Head Master room, Art and Craft room, Toilet Blocks, Drinking water etc.
   - Strengthening of existing secondary schools through construction of additional classrooms, Laboratories, Library ,computer room, separate toilets for girls and boys, resource room for CWSN, etc
   - Girls hostel for EBBs
   - Vocational Education related workshops
   - Major repair for school building
   - Teachers Quarter

   1.1 Enabling provision for infrastructure support:

   1.1.1 New Schools/ Upgraded school: New schools buildings constructed under the programme school should have the following facilities:

   - 4 class room for 2 section school / 2 classroom for 1 section school
   - 1 Science Laboratory
   - Laboratories for vocational education
   - Headmaster room
   - Office room
   - Computer room
   - Art/craft/culture room
   - Library room
   - Separate toilet blocks for boys and girls
   - Drinking water facility

   Plinth area for 1 section and 2 section school should be 540 sq.mt. and 672 sq.mt. respectively considering the above items of constructions. All the building should have provision for electrification, sanitation and plumbing work etc. Estimate should be inclusive of electrical and sanitary/plumbing works. Provision of lump sum % for these items is to be avoided and is bound to be normalised at national level. The unit cost, where . not specifically mentioned in the RMSA norms, would be based on SSOR or CPWD rates whichever is lower.

1.1.2 Strengthening of existing secondary and higher secondary school: Civil works under RMSA should start with a proper assessment of the infrastructure requirement for each District. There need to be a school-wise compilation of physical and monetary requirements. While planning for strengthening of existing schools following points to be considered:

- The gaps with respect to infrastructure in the existing school should be identified based on the UDISE data
- While adding infrastructure to a school, it should be ensured that all the required infrastructure works are planned in a single go. This will ensure a school once covered has all the required facilities. (Whole school approach). In this approach all the aspects like ramps, railing, and toilet for CWSN, labs for vocational trades etc. needs to be planned in single year.
- The components that can be undertaken under the programme are listed below with specifications to be followed:

Class rooms/ Additional classrooms	Class Room- Pupil Ratio: 1:40 Minimum ratio 1:25 Class Room size: as per State norm, or plinth area of 66 sq. mt. At least two additional class rooms should be built in one secondary Schools. At least four additional class rooms, two sections each for classes IX & X should be built in one upgraded upper primary schools Cost of construction will include furniture, fixtures, fittings, circulation area (verandah) etc.
Science Laboratory	One Integrated Science Laboratory- for Physics, Chemistry, Biology & Mathematics. Room size: as per State norm or 66 sq.mt of plinth area. Cost of construction will include furniture, fixtures, fittings, circulation area (verandah) etc.
Lab Equipments	Necessary equipments for Physics. Chemistry. Biology and Mathematics' will be needed initially to facilitate academic activities. Provision of Rs. 1 lakh per Laboratory One time grant For schools where Science laboratory has been approved under the programme.
Headmaster/ Principal room	1 HM room for schools where there is no HM room In case there is one HM for elementary and secondary room, it would be available under SSA- RTE.
Office Room	1 office room for schools where there is no office room In case there is one office room for elementary and secondary room, it would be available under SSA- RTE.
Girls' Activity Room	1 Girls activity room for each Govt school.
Computer	Room size: as per State norm or plinth area of 66 sq.mt.

Room/laboratory	Cost of construction will include furniture, fixtures, fittings, circulation area (verandah) etc.
Art /Craft/ Culture laboratory	Class Room size; as per State norm or plinth area 66 sq.mt. Cost of construction will include furniture/ equipments/ tools, fixtures, fittings, circulation area (verandah) etc.
Library	Library will be established and run in a room of adequate size as per the norms fixed by the State Government or plinth area of around 100 sq.mt. Cost of construction will include furniture, Almirah, racks, fixtures, fittings, circulation area (verandah) etc.
Toilets and Drinking water facilities	Requisite number of toilet blocks in each school, separately for Boys, Girls, staffs & teachers and differently abled children Adequate drinking water facilities in every school. Every school to have atleast one toilet which CWSN can access. In case as exiting toilet can be converted to CWSN friendly toilet, funds for conversion maybe sought. Proper drainage system in every school.
Resource Room at block level for CWSN	Resources room for CWSN may be provided at block level /urban cluster. Efforts should be made to converge with similar efforts made by SSA. In case the Resource room created under SSA can be utilised by secondary and higher students with some additional strengthening, it should be done instead of constructing a separate resource room Equipment for block level resource rooms can be provided @ Rs. 70000 per resource room for equipping the resource room.
Ramp and Railing	All the rooms in the schools including the lab and Libraries should be accessible to CWSN. Wherever there is a gap, it can be undertaken.
Lab for Vocation Education	As far as possible integrated lab may be utilised for education of vocational trades. Separate Lab would be approved under vocational education for trades that may need special provisions In case where construction of lab/ workshops has to be undertaken it should be within the premises of the existing secondary/higher secondary school. The size of the workshop as per the norms approved is 10 x10 sqm.

1.1.3 Major Repair:-Civil components of RMSA allow major repairs up to Rs. 4 lakh for 2 section schools and Rs. 2 lakh for I section school. The ceiling of 50% or 60% would not include expenditure on major repair. The Major repair grant can be utilised for following:

- Adaptation of existing building environment (indoor and out-door) towards new pedagogy. It is important to systematically identify the nature of adaptations and find the most cost effective method to achieve it.

- Retrofitting the existing buildings towards hazard resistance thermal comfort, better light and ventilation.
- Drinking water and sanitation facilities.

1.1.4 Teachers Quarter: Residential quarters for teachers in remote/hilly areas/in areas with difficult terrain can be considered. Quarters will be built as residential clusters with accommodation for teachers of all schools within a particular area. The cost will be approved as per SSOR. While accommodating teachers preference for female teachers should be given.

1.1.5 Girls Hostel: There is provision to construct one hostel with the capacity of 100 girls in each of the 3500 EBBS. Wherever there is space is KGBV compound, the hostels would preferably be constructed there. While preparing the design for Girls Hostel following needs to be considered:

- The minimum living space available to each inmate should be 40 sq. feet excluding kitchen, toilet and other common space.
- The total plinth area of 100 bedded Girls hostel to be kept 11650 sq.ft. with provision of +/- 5%.
- The unit cost will be on SSOR. Estimate with detail measurement for electrical and plumbing installation should be part of main estimate. Submission on lump sum %basis should be avoided.
- The buildings will be designed as earthquake resilient and will be fitted with basic fire safety equipments.
- Efforts will also be made to design the buildings with provision for solar energy generation, use of solar cooker and biogas.

1.1.6 Minor Repair: Minor repair grant @ Rs. 25000 per school per annum may be considered under special circumstances. Following repairing works can be undertaken under the head:

- School building
- Toilets
- Tanks
- Play Ground
- Campus
- Conservancy Services
- Electrical fittings .
- Sanitary & Other fittings
- Furniture and fixtures etc.

Expenditure on repair & maintenance of building would not be included for calculating the 50% limit for civil works. Grants will be available only for those schools which have existing buildings of their own. The fund available in a year cannot be carried forward to next year. Neither can grants of two years or more can be accumulated to utilise in consequent year.

1.2 Key Features for construction work under the programme

- The allocation' for civil works will not exceed 50% of the approved Perspective Plan. However, in a particular year's Annual Plan, provision for civil works can be considered up to 60% of the Annual Plan expenditure depending upon the priorities assigned to various components of the scheme in that year within the overall project ceiling of 50%.
- The unit cost, where not specifically mentioned in the RMSA norms, would be based on SSOR duly notified by state Government or CPWD whichever is lower.
- Incorporation of child-friendly internal and external elements will be mandatory in all the new construction and repair works. All schools will be fitted with rain water harvesting system and disabled friendly provisions. RMSA will encourage use of local construction materials and low cost technologies.
- Incorporation of child-friendly internal and external elements will be mandatory in all the new construction and repair works.
- All schools will be fitted with rain water harvesting system and disabled friendly provisions.
- Use of local construction materials and low cost technologies to be given preference.
- Maximizing pedagogic potential of indoor and outdoor school spaces. "Bala" concept can be referred to.
- School building to incorporate safety features for resistance against hazards.
- The new structures will be constructed as earthquake resistant and will have facilities for water harvesting.
- Provisions for renewable energy utilisation may be explored in the school buildings strengthened/ upgraded under RMSA. Solar panels for water heating, running water pump, solar lantern etc. are suggested as some of the possible activities.
- Report on Environmental assessment can also be referred to athttp:// rmsaindia.org/images/Environment Management Framework.pdf

1.3 School buildings to adhere to specified construction standards: The national building code of India 2005, developed by the Bureau of Indian standard (BIS) provides guidelines for regulating building construction activities across the country. The code should serve as reference for all States and UTs, for design and construction of school infrastructure. This requirement does not preclude the use of local constructions design, materials and practices. Details are available on RMSA website http ://rmsaindia.org/ images/Extract of National Building Code of India. pdf

1.4 Technical support for implementation

- Creating/accessing technical capacity for large scale school infrastructure create and for quality assurance.
- Quality assurance:-In order to assure quality of civil works, on independent assessment of the technical quality of civil works through third party evaluation (TPE) is mandatory. The TPE is to highlight good practices, bring out strength and weaknesses and share with district/ state level engineers. In addition inbuilt quality control test for building materials are undertaken by in-house engineering cell or agency supervision/facilitating technical support.

1.5 Construction practices while executing the works can be referred to at RMSA website at http://rmsaindia.org/imnes/Construction Practices and Quality Control Tests.pdf

1.6 Capacity building of SMDC for undertaking building construction:- RMSA will encourage use of local construction materials and low cost and environment friendly technologies without compromising on the structural soundness and safety of the building. The SMDC will need to be trained in certain specific technical aspect such as collaborating in the development of drawings understanding cost estimates, assessing building material quality, keeping accounts, material procurement etc. maintaining transparency about funds received and used through social audits, display boards etc. the training can be imparted in a simple and effective manner in the local language, through technical/ other experts who are themselves trained to communicate effectively and demystify these issues.

- The School Management and Development Committee headed by the Principal would be empowered to conduct any civil works including repairing & maintenance for improvement of schooling facilities after following procedures as per rules. The scheme, however also recognizes that all try to mobilize resources under Rural Employment Programme and other developmental schemes for constructing school buildings must be undertaken first before engaging any other modes getting civil work done.

- School Management and Development Committees will have to carry out the civil works activities through a transparent system of account keeping.
- The School Management and Development Committee could certify the maintenance and repair work undertaken in a school. For repair and maintenance as well as new construction, technical provisions will be followed. The Communities' right to know the cost parameters has to be fully respected.
- Efforts to improve the school environment by addition of a few inexpensive internal and external elements will be made. Use of local materials and cost effective technologies will be encouraged. Repair and maintenance of buildings will be given priority. The States may make use of designs already developed in their specific local contexts or the designs adopted by the Kendriya Vidyalaya Sangathan.

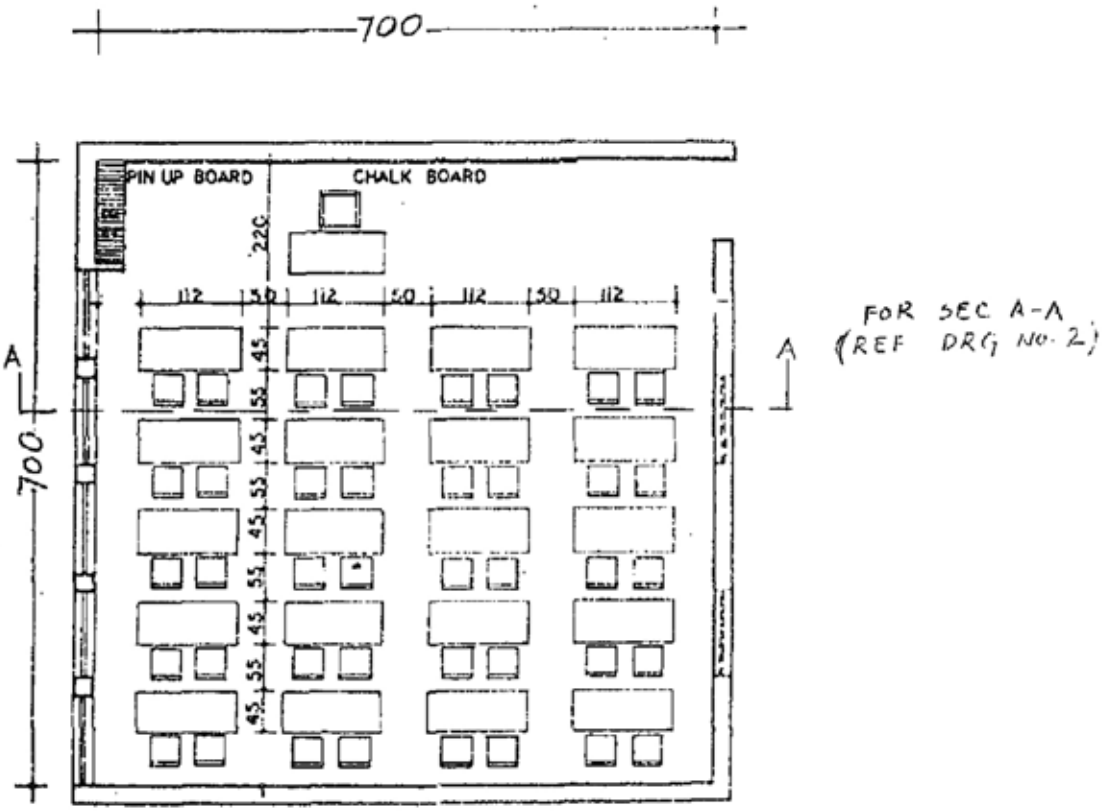
1.7 Checklist of document required to be prepared / submitted for civil works proposal: While submitting proposal for civil works components, State need to ensure that requisite details and document are part of the Annual Work Plan.

Source :http://www._education.ie_Page 2 to 7Of Guidelines ForSchool InfrastructureAnd Strengthening (Civil Works) Issued by Ministry of Human Resource Department(December -2014)

4. Drawings for Reference

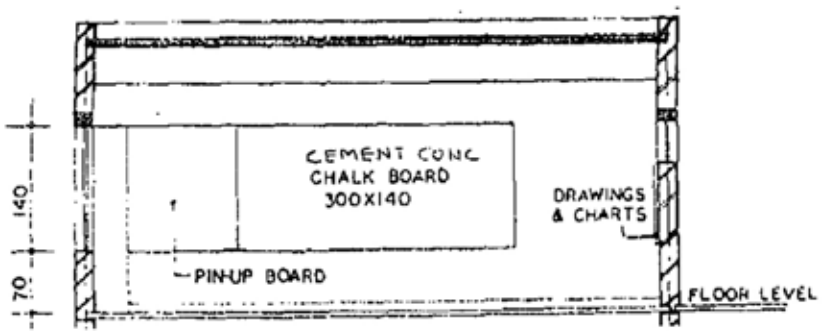
DRAWING NO. KVS - 01

CLASS ROOM (PRIMARY/HIGHER SECONDARY)



NOT TO SCALE
DIMENSIONS IN CMS

DRAWING NO. KVS - 02



SEC - AA

BLACK BOARDS FOR SCHOOLS

[Ref : Indian Practical Civil Engineers' Hand Book – 2001)

Height from floor to base of the black board

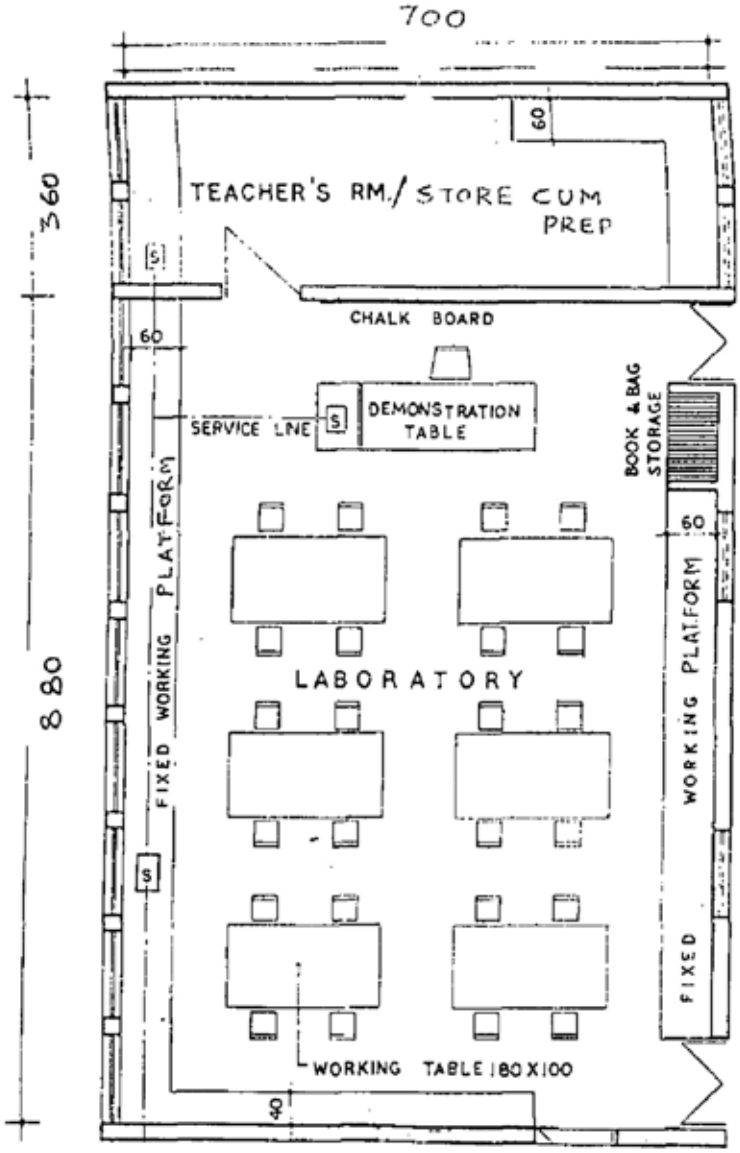
Primary Class Rooms ---- 53 cms
Elementary Class rooms ---- 64 cms
High School Class Rooms ---- 76 cms

Height of Black Boards --- 1.06 mts , 1.22 mts, 1.37 mts,
(1.22 mts is the best)

Specifications ---- Under coat of 12 mm cement plaster of 1 Cement , 2 Sand and 1 Charcoal powder. Finishing coat of 1 Cement and 1 Charcoal 3 mm thick .

Paint ---------- Dissolve ½ kg of shellac in 5 litres of methylated spirit and add ½ kg of ivory black , 75 gms of finest flour emery and ¼ kg of ultramarine blue. Mix and put in stoppered bottles. Shake well when using.

20



DRAWING NO. KVS - 0

PHYSICS LABORATORY

S—SINK

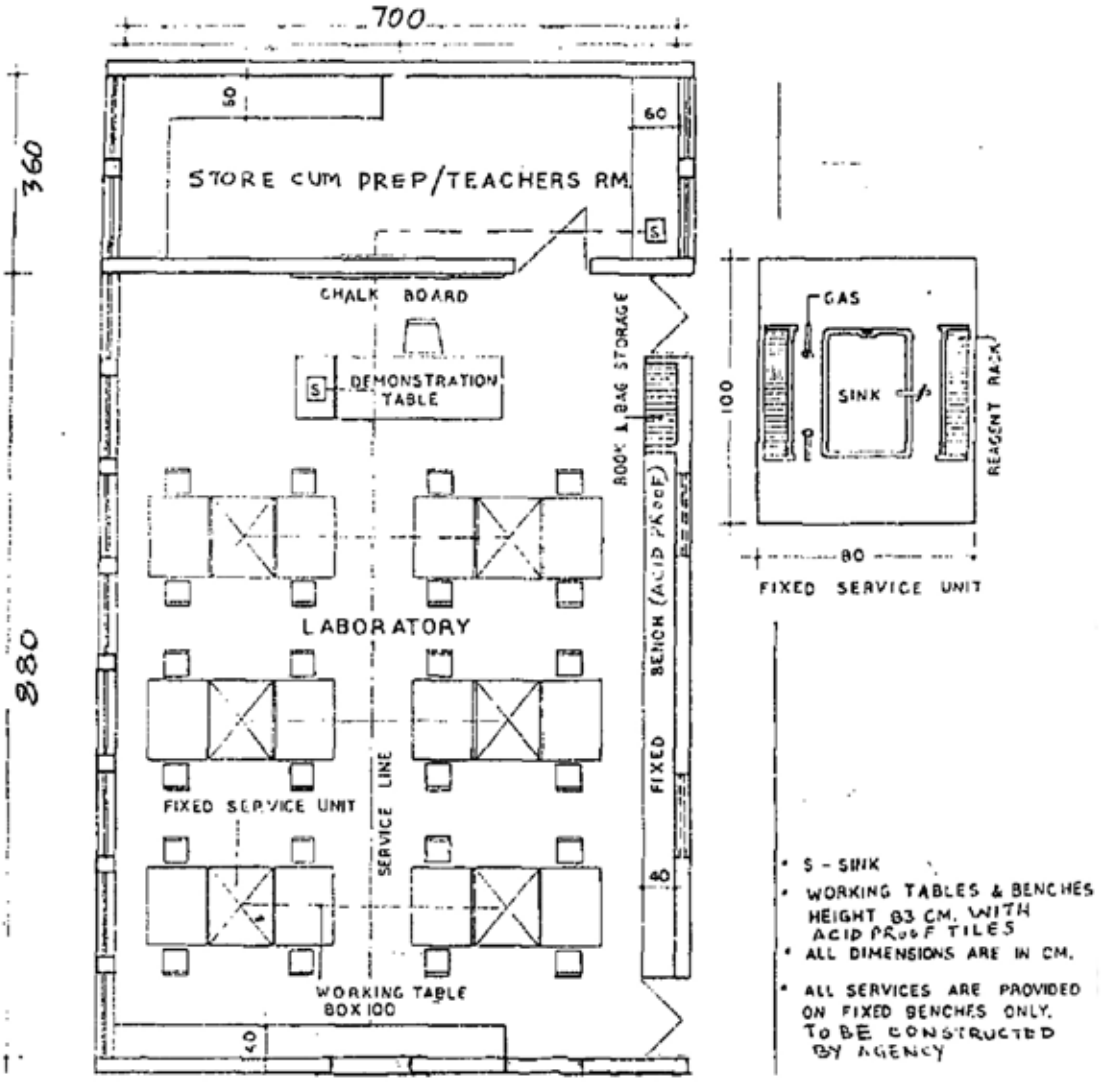
- WORKING PLATFORM HEIGHT 83 CMS & SHALL BE CONSTRUCTED BY CONTRACTOR
- WORKING TABLES (WOODEN) SHALL BE PROCURED BY PRINCIPAL

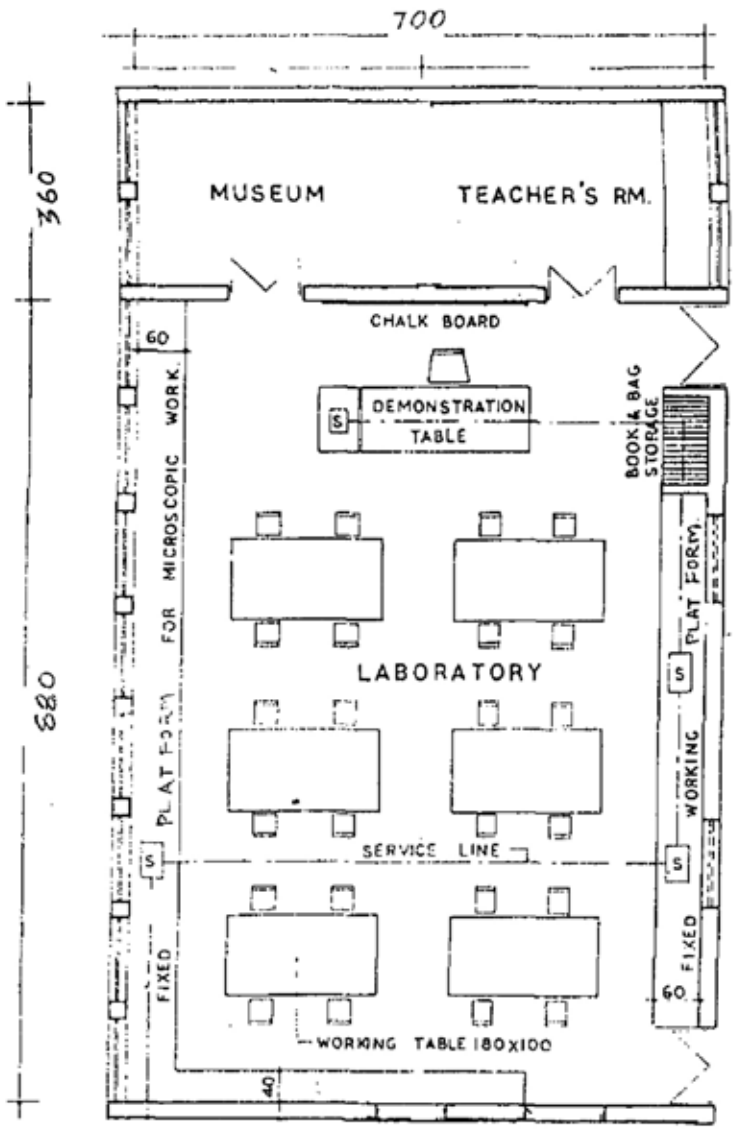
NOT TO SCALE

DIMENSIONS IN CMS

DRAWING NO. KVS - 04.

CHEMISTRY LABORATORY





DRAWING NO. KV505

BIOLOGY LABORATORY

ALL DIMENSIONS ARE IN CM.

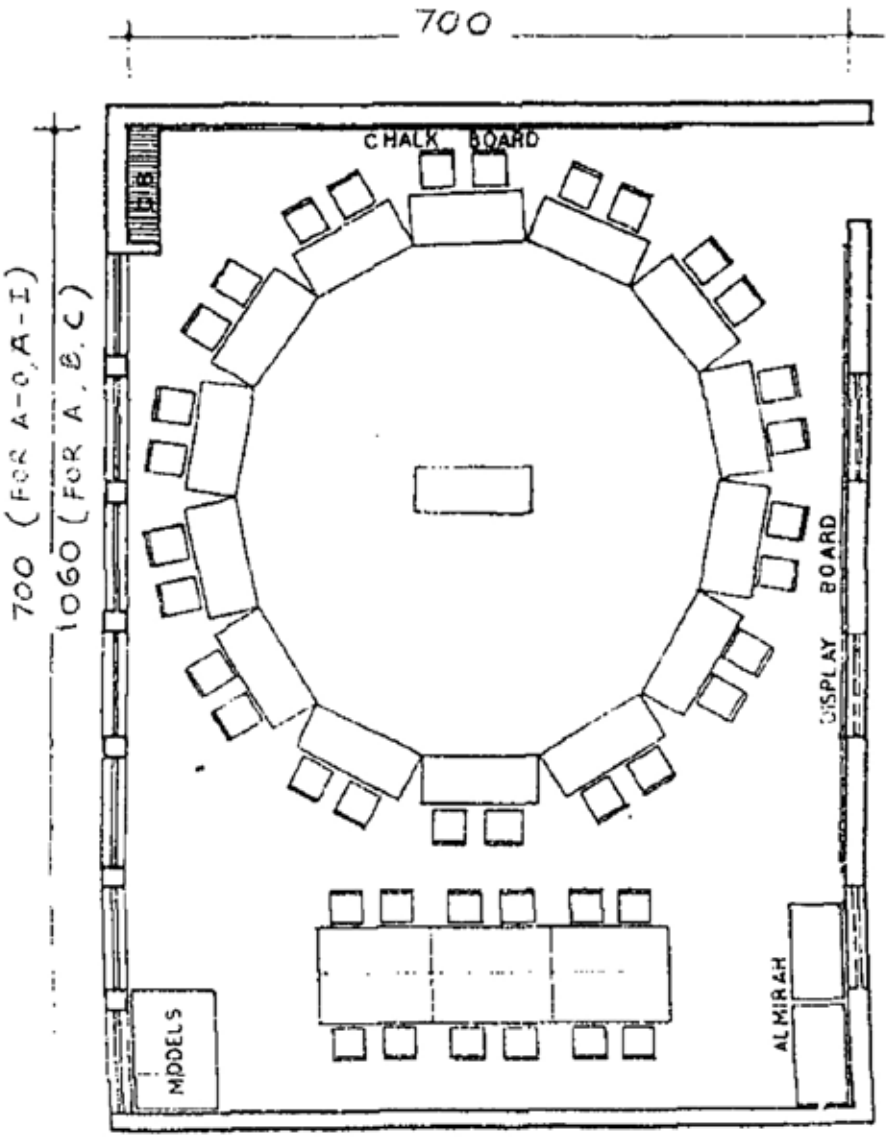
S—SINK

WORKING PLAT FORM HEIGHT 83 CM. & SHALL BE CONSTRUCTED BY AGENCY

WORKING TABLES (WOODEN) SHALL BE PROCURED by PRINCIPAL

DRAWING NO. KVS - 06

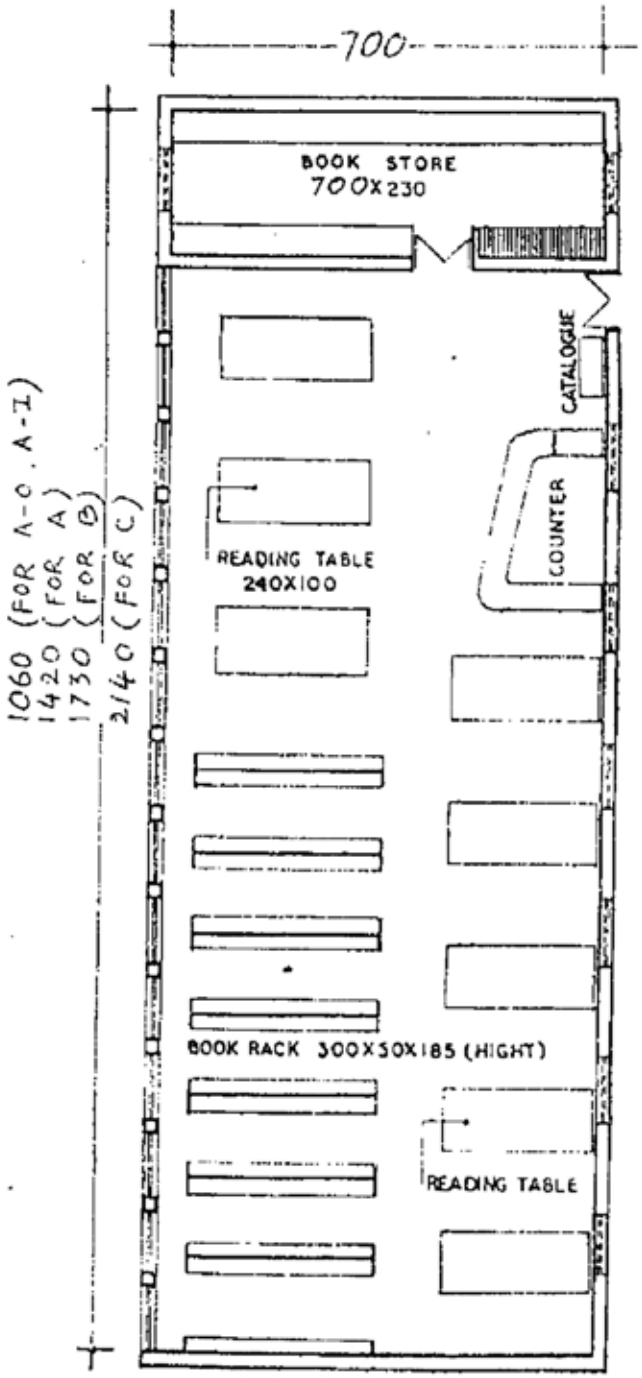
ART AND CRAFT ROOM
(SUGGESTIVE ARRANGEMT
OF FURNITURE)



TABLES / FURNITURE
TO BE PROVIDED BY
PPL / KV.

DRAWING NO. KVS - 07

LIBRARY FOR SCHOOLS



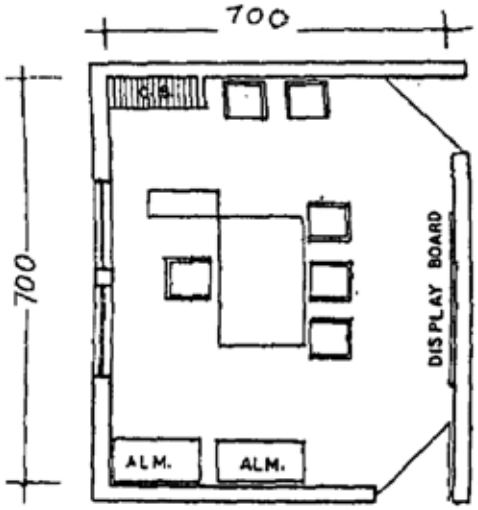
DIMENSIONS IN CMS

NOT TO SCALE

DRAWING NO. KVS-08

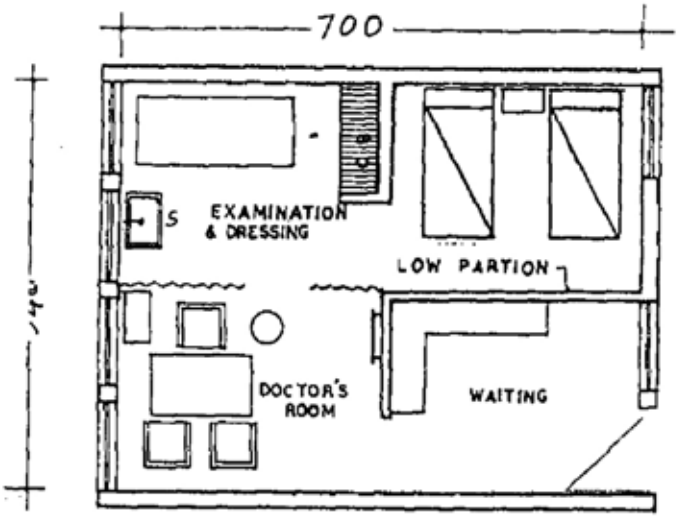
PRINCIPAL'S ROOM

ATTACHED TOILET SHALL BE SUITABLY LOCATED

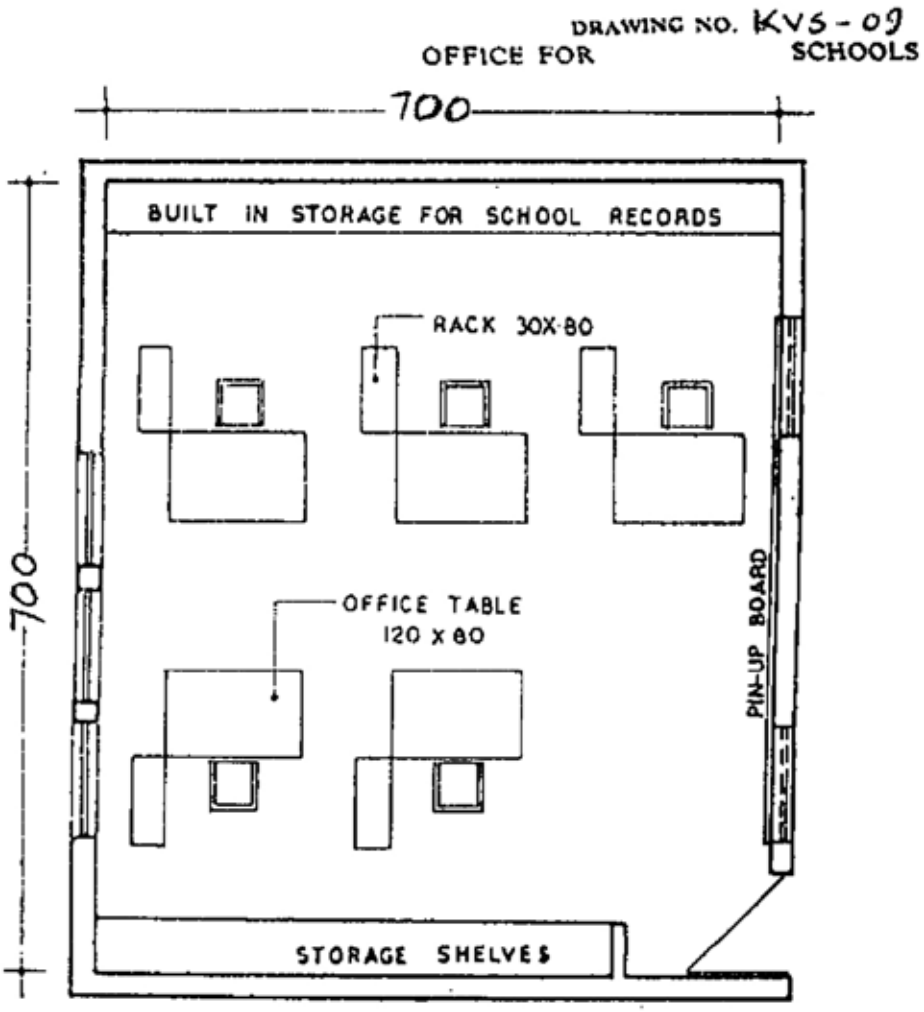


DRAWING NO.

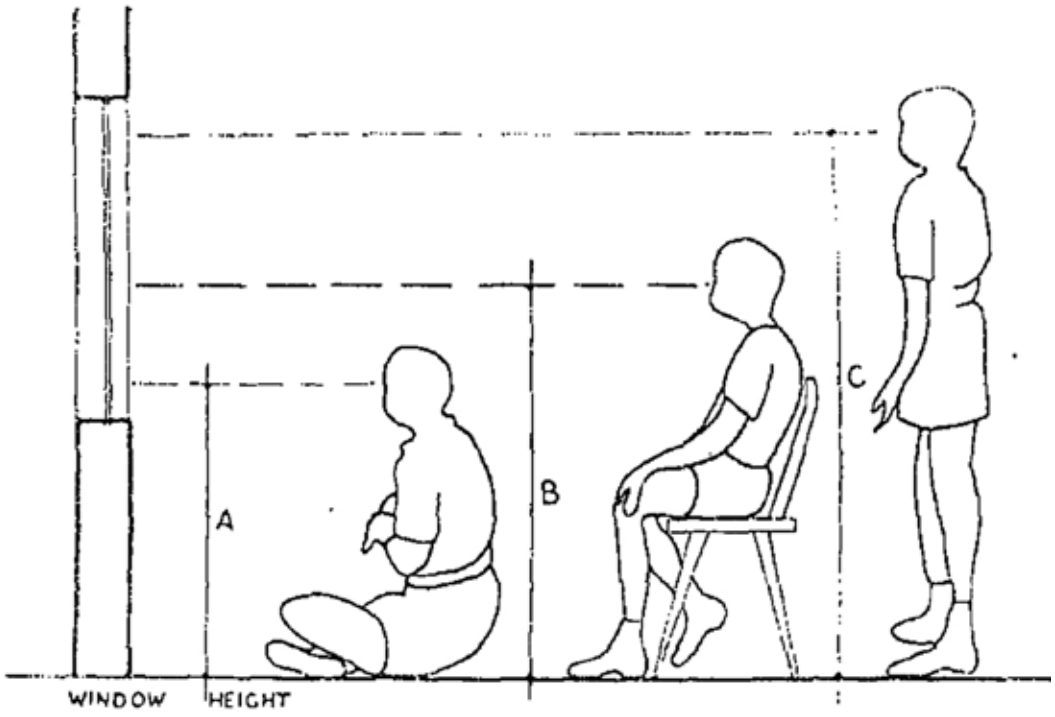
MEDICAL UNIT



S - SINK

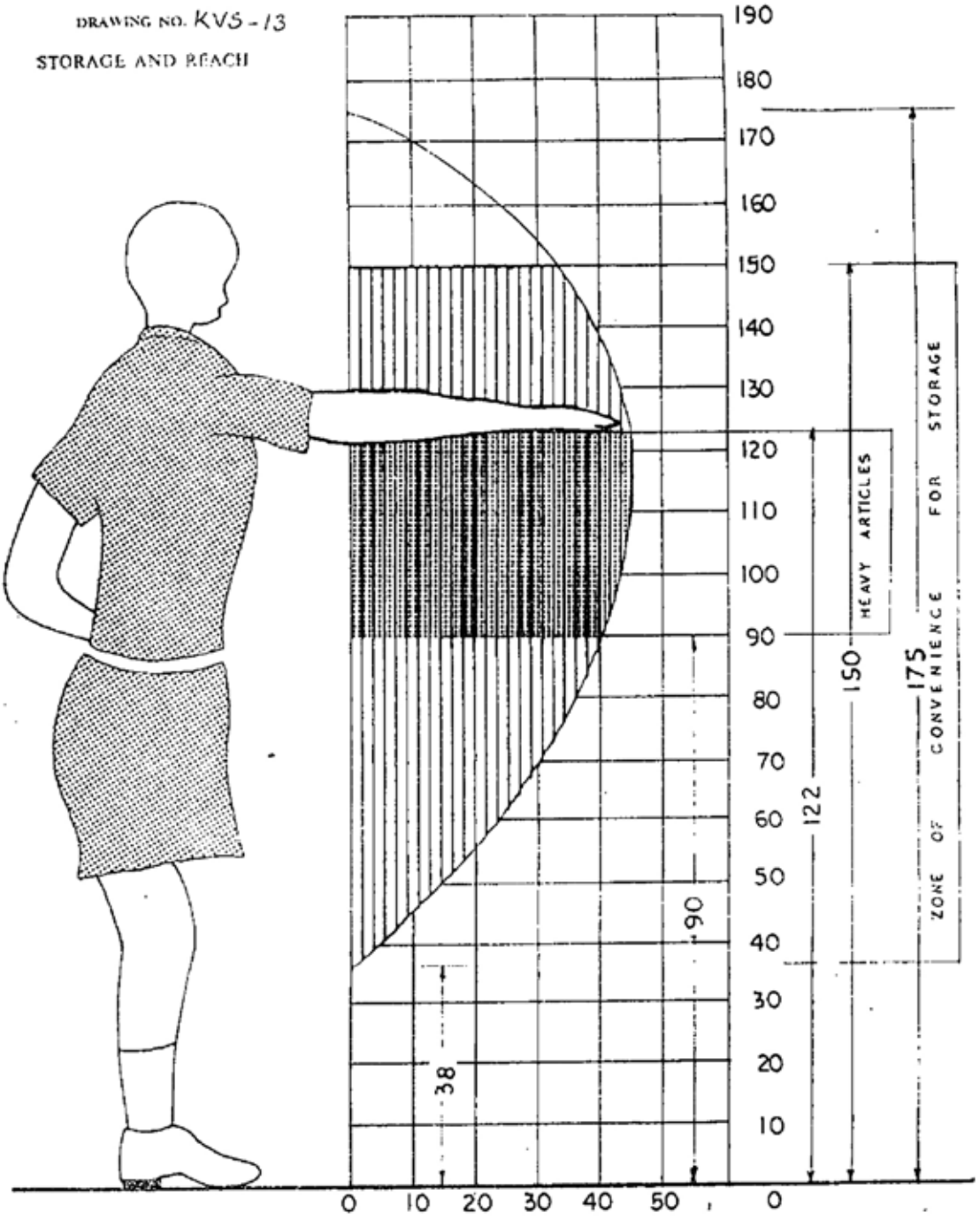

DRAWING NO. KVS - 09
OFFICE FOR SCHOOLS
700
700
BUILT IN STORAGE FOR SCHOOL RECORDS
RACK 30X80
OFFICE TABLE
120 X 80
PIN-UP BOARD
STORAGE SHELVES

DRAWING NO. EVS - 12



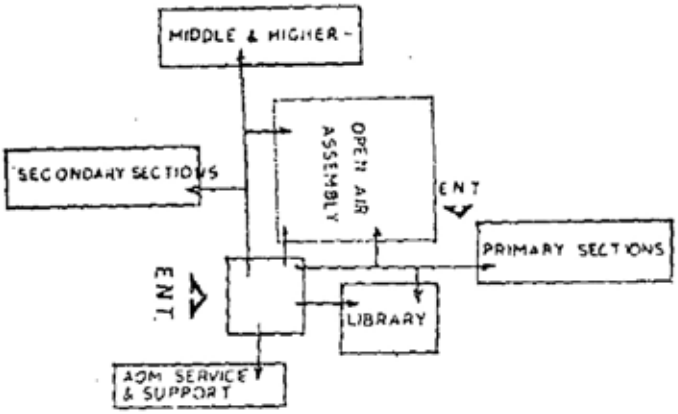
EYE LEVEL DIMENSIONS (In MM.)

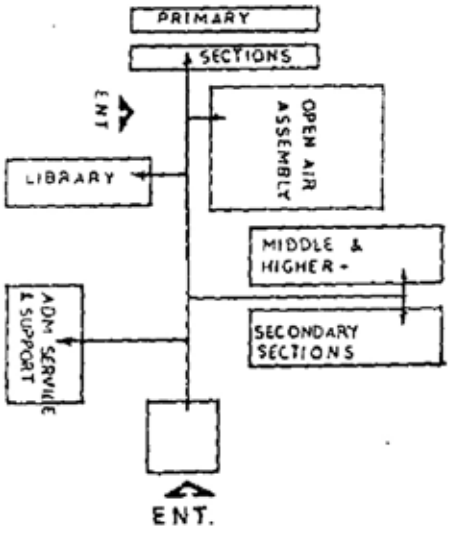
AGE	A	B	C
5	445	731	986
6	475	779	1051
7	496	814	1097
8	513	842	1135
9	538	883	1190
10	578	945	1273
11	588	966	1302
12	596	980	1321
13	617	1014	1369
14	643	1056	1423
15	668	1097	1479
16	685	1125	1516

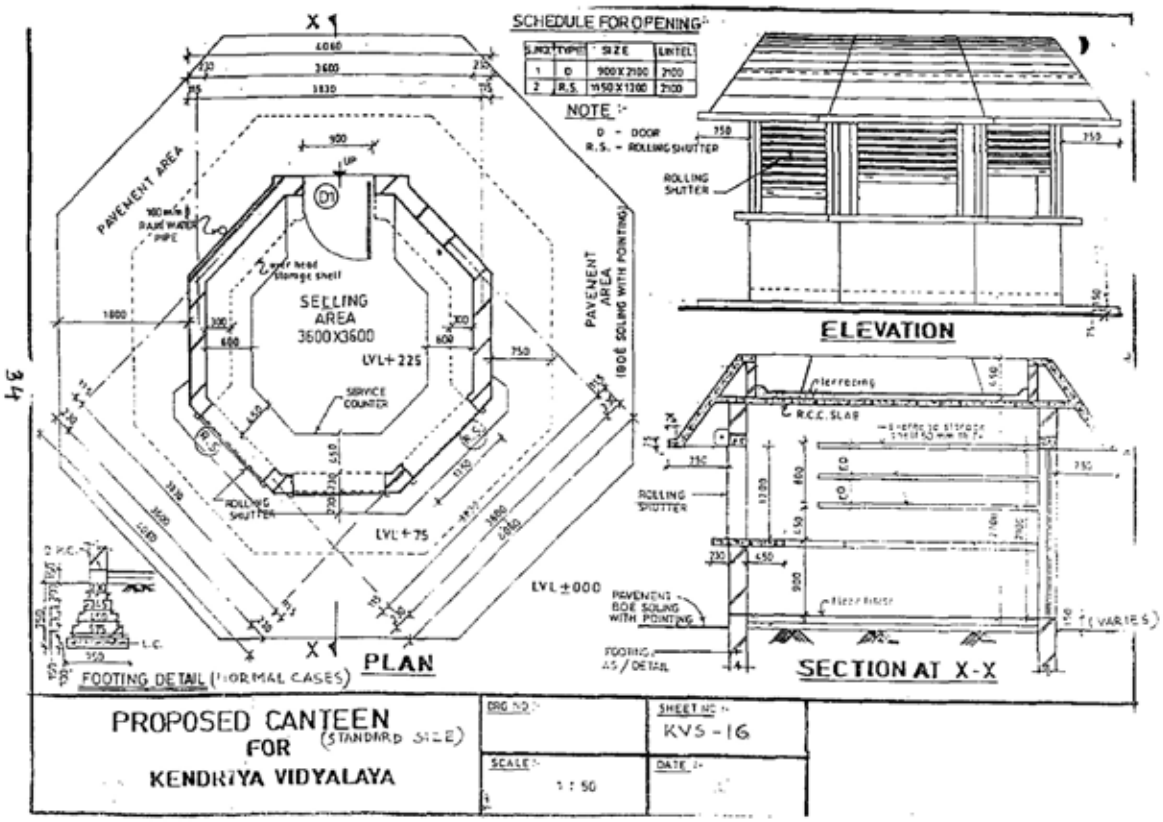

DRAWING NO. KVS - 13
STORAGE AND REACH
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
10
20
30
40
50
0
38
90
122
150
175
HEAVY ARTICLES
ZONE OF CONVENIENCE FOR STORAGE

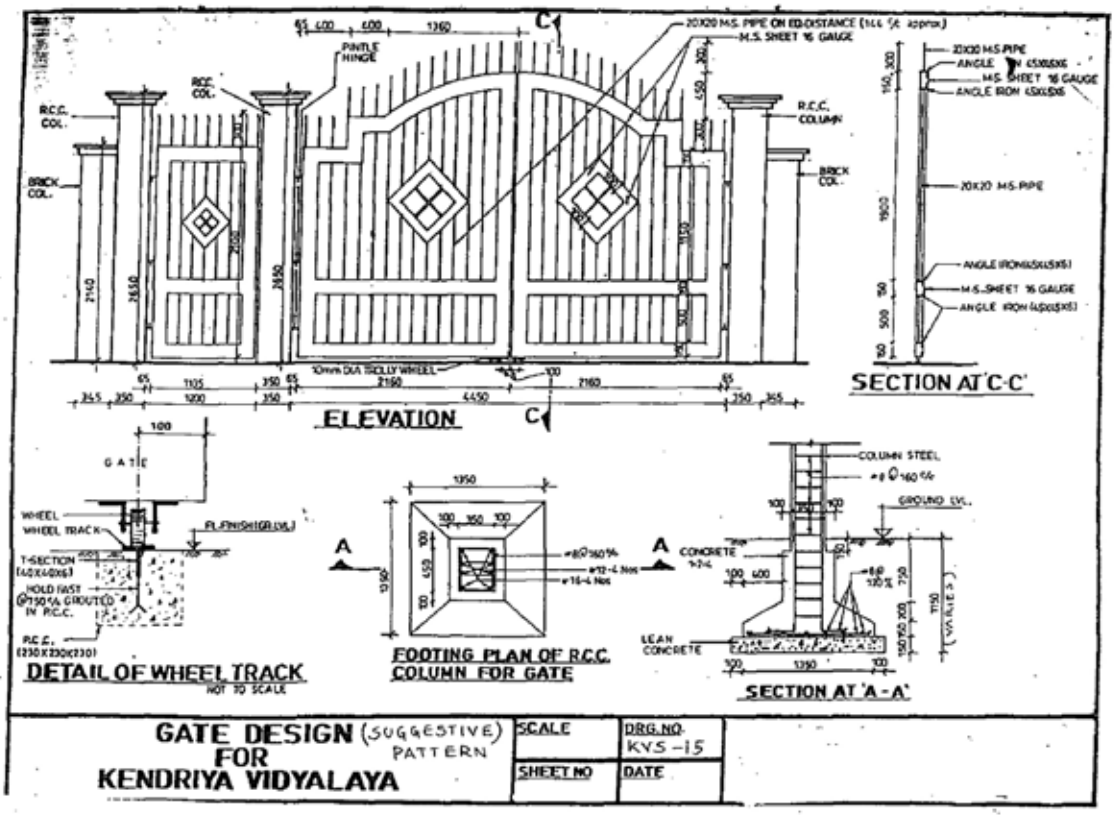
DRAWING NO KVS - 14

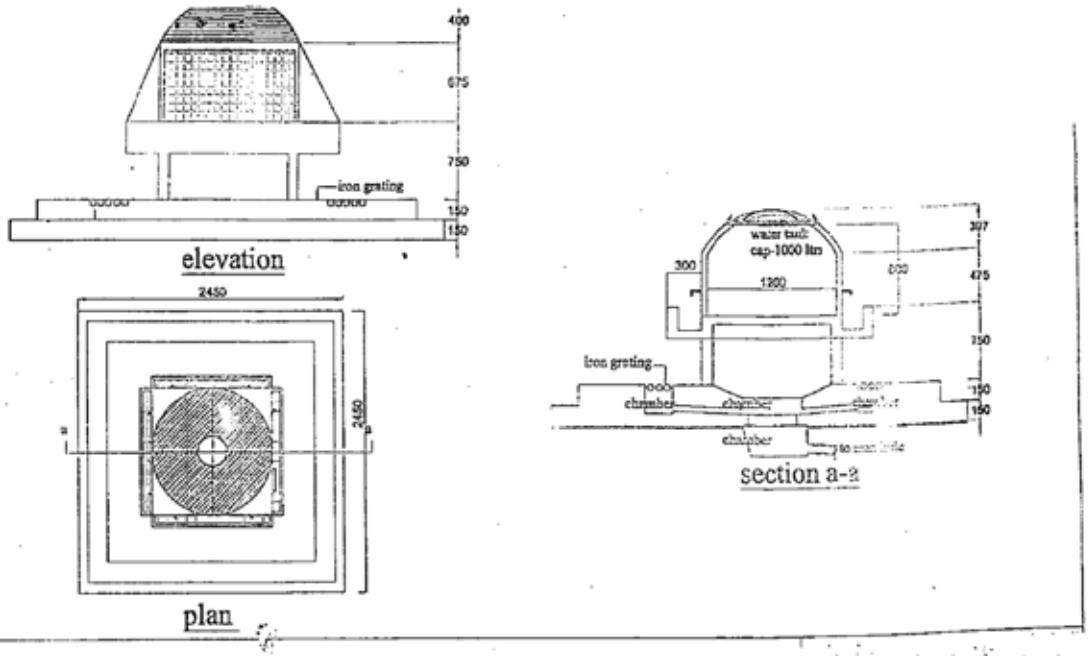
INTER-RELATIONSHIP OF SPACES






SCHEDULE FOR OPENING
NOTE :-
D - DOOR
R.S. - ROLLING SHUTTER
SELLING AREA 3600X3600
PAVEMENT AREA
ROLLING SHUTTER
SERVICE COUNTER
PLAN
ELEVATION
SECTION AT X-X
FOOTING DETAIL (NORMAL CASES)
PROPOSED CANTEEN FOR KENDRIYA VIDYALAYA (STANDARD SIZE)
SCALE :- 1 : 50
SHEET NO :- KVS-16


PINTLE HINGE
R.C.C. COL.
BRICK COL.
ELEVATION
SECTION AT 'C-C'
GATE
WHEEL TRACK
DETAIL OF WHEEL TRACK
FOOTING PLAN OF R.C.C. COLUMN FOR GATE
SECTION AT 'A-A'
GATE DESIGN (SUGGESTIVE) PATTERN FOR KENDRIYA VIDYALAYA
SCALE
DRG. NO. KVS-15
SHEET NO
DATE

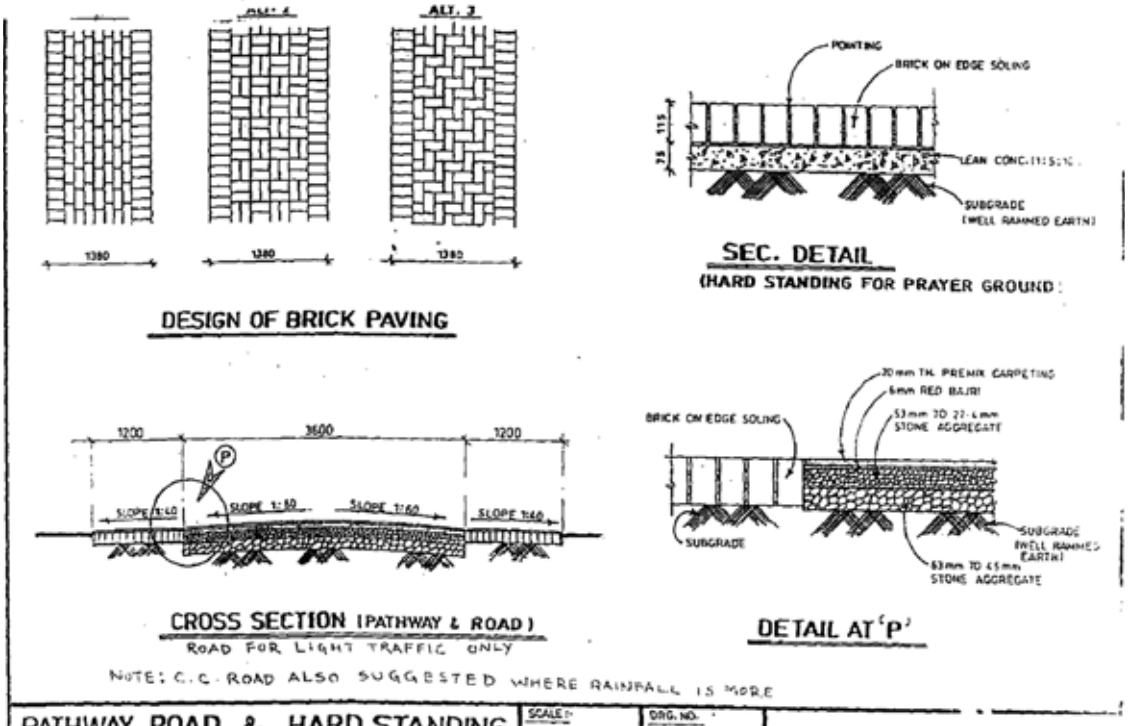


DRG NO- KVS-21

detail of water kiosk

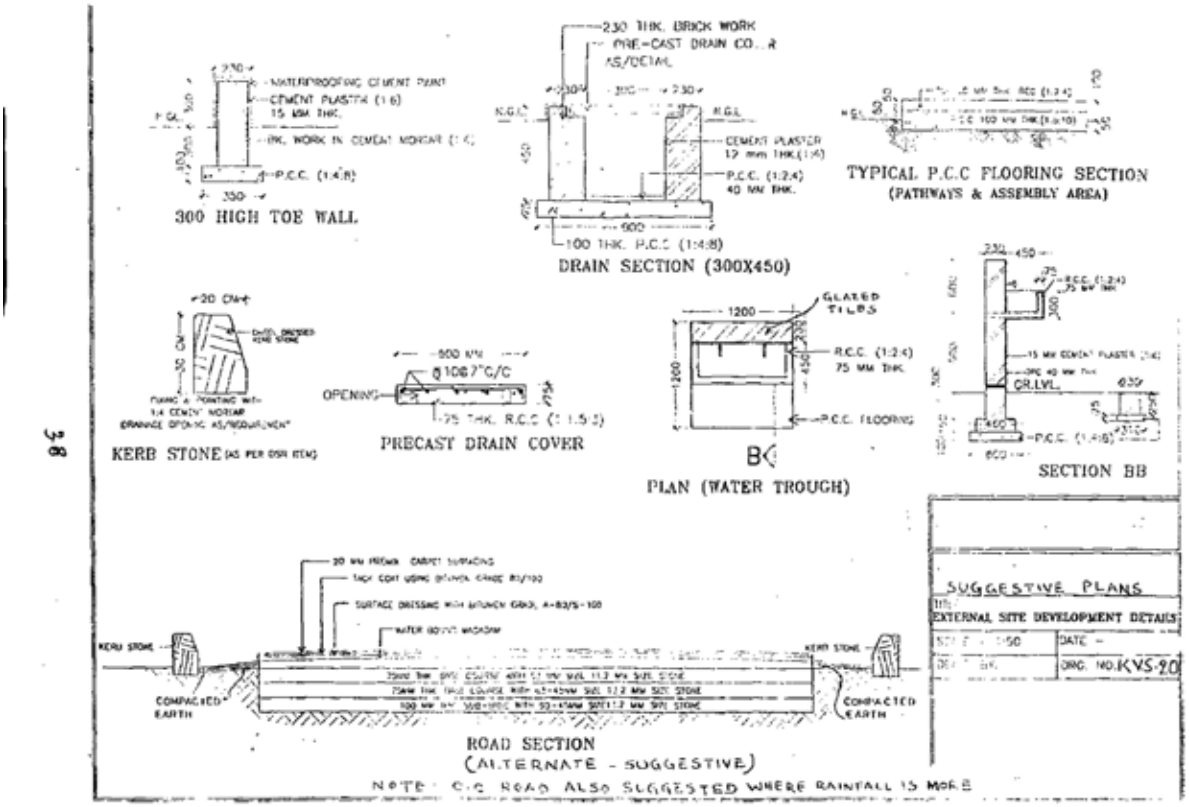
(OUTSIDE BUILDING)

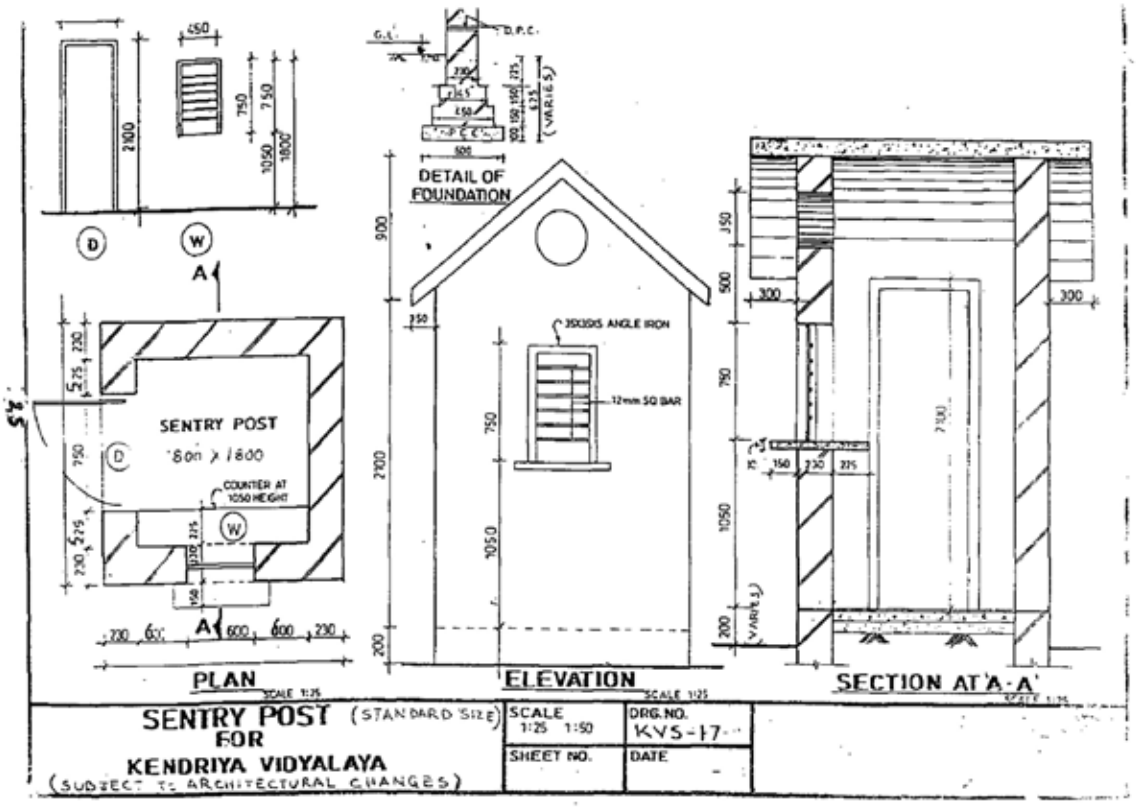
(SUGGESTIVE PLAN)

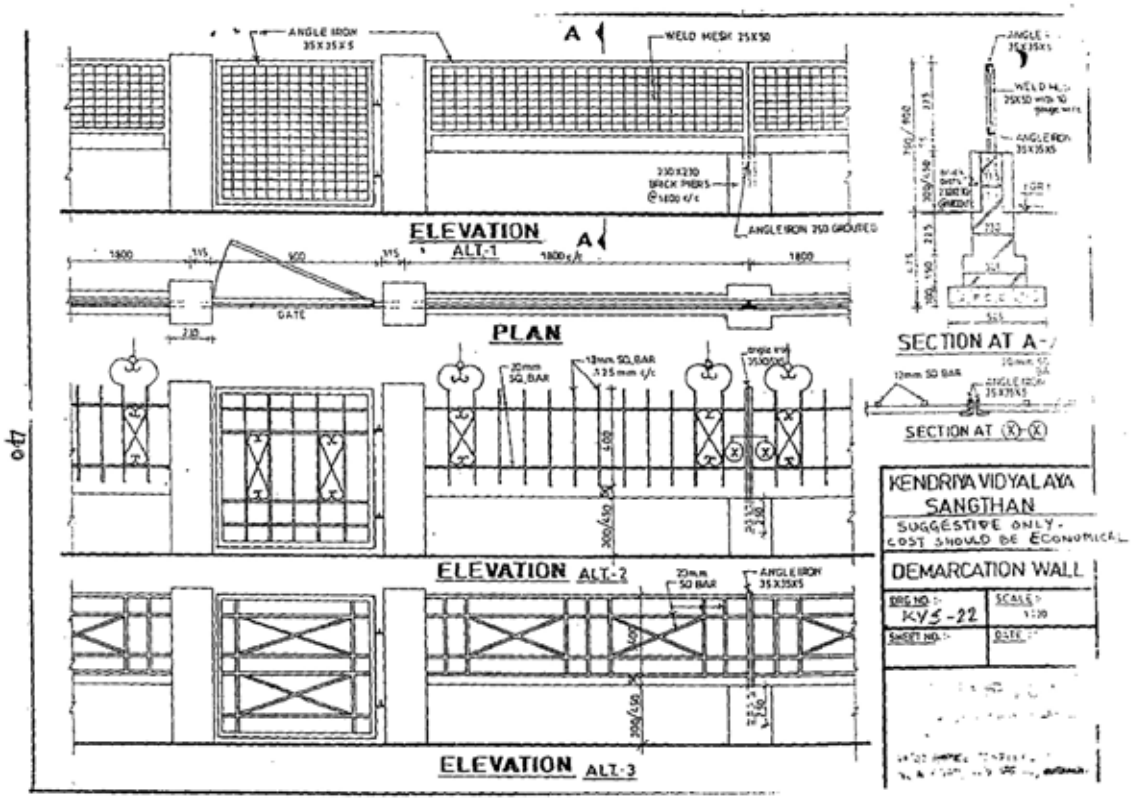


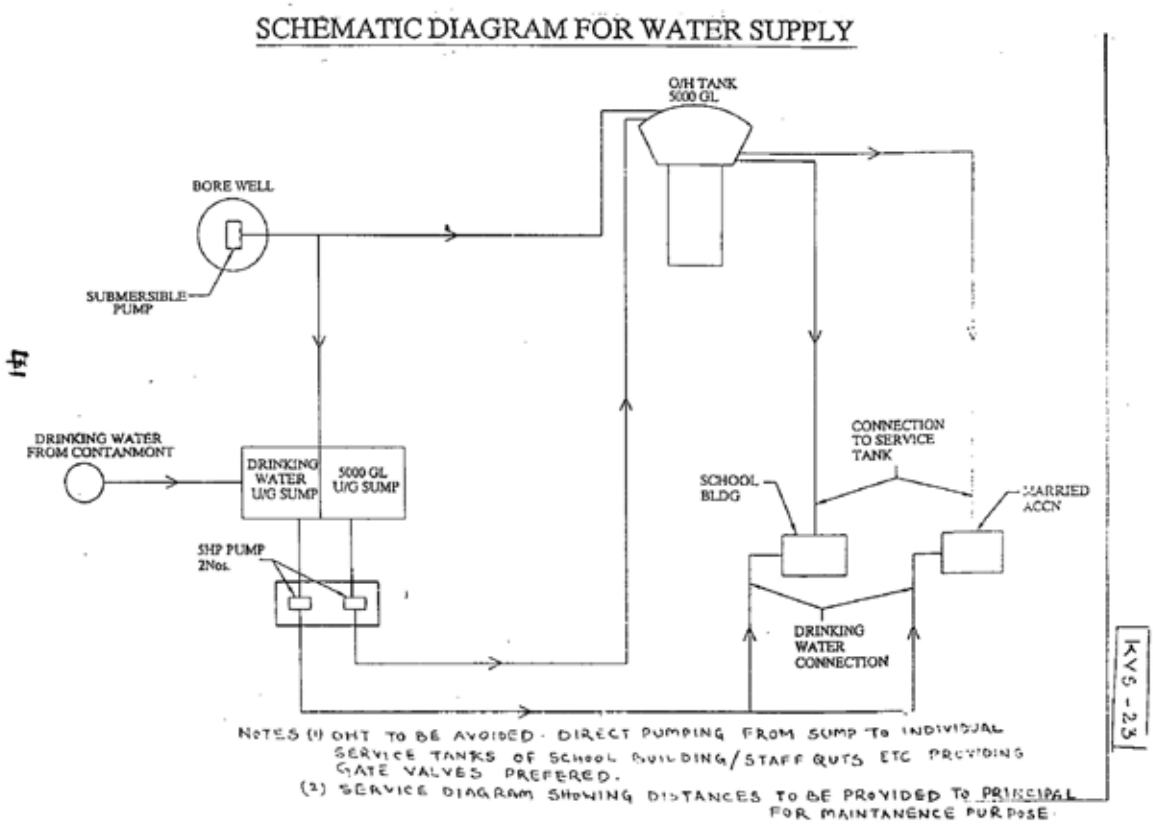
NOTE: C.C. ROAD ALSO SUGGESTED WHERE RAINFALL IS MORE

PATHWAY, ROAD & HARD STANDING SUGGESTIVE PLANS FOR KENDRIYA VIDYALAYA SANGTHAN	SCALE:-	DRG. NO. KVS-18
	SHEET NO.:-	DATE:-


300 HIGH TOE WALL
DRAIN SECTION (300X450)
TYPICAL P.C.C FLOORING SECTION
(PATHWAYS & ASSEMBLY AREA)
KERB STONE
PRECAST DRAIN COVER
PLAN (WATER TROUGH)
SECTION BB
SUGGESTIVE PLANS
EXTERNAL SITE DEVELOPMENT DETAILS
ROAD SECTION
(ALTERNATE - SUGGESTIVE)
NOTE: C.C ROAD ALSO SUGGESTED WHERE RAINFALL IS MORE


SENTRY POST
800 x 1800
COUNTER AT 1050 HEIGHT
DETAIL OF FOUNDATION
PLAN
ELEVATION
SECTION AT 'A-A'
SENTRY POST (STANDARD SIZE)
FOR
KENDRIYA VIDYALAYA
(SUBJECT TO ARCHITECTURAL CHANGES)
SCALE 1:25 1:50
DRG.NO. KVS-17
SHEET NO.
DATE





Source : https://kvsangathan.nic.in/sites/default/files/land16.
PDFPage 19 to 40 Of Guidelines For Planning and Construction of School Buildings of KVS (Revised -2013)

5. Norms & Requirements for Engineering, Architecture, MBA & Pharmacy Colleges from All India Council for Technical Education (AICTE)

Appendix 3

3.0 Norms for Intake and Number of Courses/ Divisions in a new Technical Institution

3.1 Diploma/ Post Diploma Level

Sl. No.	Programme	Intake per Division	Maximum number of Diploma/ Post Diploma Certificate Course(s)/ Division(s) allowed in an Technical Institution (First Shift only)	
			Course(s)/ Division(s)	Maximum Intake allowed
i	Engineering and Technology	60	5	300
ii	Pharmacy	60	1	60
iii	Architecture and Planning			
	a. Architecture	40	2	80
iv	Applied Arts, Crafts and Design			
	a. Applied Arts and Crafts	30	3	90
	b. Design	30	3	90
v	Hotel Management and Catering Technology	60	3	180

3.2 Under Graduate Level

Sl. No.	Programme	Intake per Division	Maximum number of Under Graduate Course(s)/ Division(s) allowed in an Technical Institution (First Shift only)	
			Course(s)/ Division(s)	Maximum Intake allowed
i	Engineering and Technology	60	5	300
ii	Pharmacy	60	2	100
iii	Architecture and Planning			
	a. Architecture	40	4	160
	b. Planning	40	3	120
iv	Applied Arts, Crafts and Design			
	a. Applied Arts and Crafts	30	3	90
	b. Design	30	5	150
v	Hotel Management and Catering Technology	60	3	180

3.3 Post Graduate Diploma/ Post Graduate Degree Level

Sl. No.	Programme	Intake per Division	Maximum number of Post Graduate Division(s) allowed in an Institution (First Shift only)	
			Course(s)/ Division(s)	Maximum Intake allowed
i	Engineering and Technology	30*	1	30
ii	Pharmacy			
	a. M.Pharm. b. Pharm.D. c. Pharm.D. (Post Baccalaureate)	15** 30 10	1 1 1	15 30 10
iii	Architecture and Planning			
	a. Architecture b. Planning	20 30*	3 1	60 30

iv	Applied Arts, Crafts and Design a. Applied Arts and Crafts b. Design	 30 15	 3 3	 90 45
v	Hotel Management and Catering Technology	30	3	90
vi	MCA	60	3	180
vii	Management	60	5	300

* Minimum of 18 seats in steps of 6 up to maximum 30
** Minimum of 6 seats in steps of 3 up to a maximum of 15

Note: One Division with Collaboration and Twinning is permissible in each Programme

3.4 Private Limited or Public Limited Company/ Industry Establishing Diploma/ Under Graduate Degree/ Post Graduate Degree (MCA/ Management) Institution

a. New Technical Institution in Engineering and Technology/ Pharmacy/ Architecture and Planning/ Applied Arts, Crafts and Design/ Hotel Management and Catering Technology/ MCA/ Management established by a Private Limited or Public Limited Company/ Industry having turnover of at least ₹100 Crore per year for previous 3 years shall be eligible for application and granted approval for Intake as above following due procedure as specified in the Approval Process Handbook.

b. The Institution set up by such a Private Limited or Public Limited Company/ Industry shall be governed by the norms as specified in Chapter I of Approval Process Handbook.

c. Private Limited or Public Limited Company/ Industry Establishing Diploma/ Under Graduate Degree/ Post Graduate Degree Institution shall choose any Course from Appendix 2 with Intake not exceeding the maximum as above and in any combination in the same Programme.

d. Built-up area, Faculty: Student ratio and other requirements shall be fulfilled as specified in the Approval Process Handbook.

Appendix 4

4.0 Norms for Land requirement and Built-up Area for the Technical Institutions

4.1 Land Requirements for the Technical Institutions

Programme	Land Area requirement in Acre								
	Diploma/ Post Diploma Programmes			Under Graduate Programmes			Institutions offering ONLY Post Graduate Programmes (MCA/ Post Graduate Diploma/ MBA)		
	Mega and Metro*	Urban	Rural	Mega and Metro*	Urban	Rural	Mega and Metro*	Urban	Rural
Engineering and Technology	$	1.5	4.0	$	2.5#	7.5#	-	-	-
Pharmacy	$	0.75	2.0	$	0.75	2.0	-	-	-
Architecture and Planning									
a. Architecture	$	1.0	2.0	$	1.0	2.0	-	-	-
b. Planning	-	-	-	$	1.0	2.0	-	-	-
Applied Arts, Crafts and Design									
a. Applied Arts and Crafts	$	0.5	1.5	$	0.5	1.5	-	-	-
b. Design	-	-	-	$	1.0	2.0	-	-	-
Hotel Management and Catering Technology	$	1.0	2.0	$	1.0	2.0	-	-	-
MCA	-	-	-	-	-	-	$	0.5	1.0
Management	-	-	-	-	-	-	$	0.5	1.0

*... **Mega and Metro Cities: Greater Mumbai (UA), Delhi (UA) and Kolkata (UA), Chennai (UA) Bangalore (UA), Hyderabad (UA), Ahmedabad (UA), Pune (UA), Surat (UA) as per the Census of India 2011** (UA- Urban Agglomeration).

$For the Land area requirements the following conditions need to be adhered:

a. The Built-up area requirements as specified in the Approval Process Handbook (which is in-force) are adhered to.

b. The Built-up area, achieved, has to be approved by the concerned Development Authority as per the latest Building Bye-Laws (Development Controls) in that City. A copy of certified Building Bye-Laws be made available by the Applicant Institution. Copy of the approved Plan from local statutory body and the completion Plan along with the Completion Certificate from the same body, be also provided. The provisional Occupancy Certificate shall be considered only for 2 consecutive Academic Years; after two years the only afore-mentioned Completion Certificate and Completion Plan shall be considered for continuance of approval.

c. Fire and life Safety Certificate from Fire Department of the concerned State is to be taken before submitting the application at AICTE.

d. Additional Course(s)/Programme(s), in future can be allowed subject to the availability of Built-up areas as per FSI (FAR). However, if the additional construction is to be undertaken in the existing Building, then Structural Stability Certificate and Certificate of Safe Foundation to be provided by a Structural Engineer having a Master's Degree with specialization in Structural Engineering.

e. Competent Authority has to certify that the place is located in Mega and Metro/ Urban/ Rural areas.

f. The Land area required in the Mega and Metro Cities shall be calculated on the basis of the requirements as per AICTE norms for carpet area and the Municipal Corporation Bye-Laws. However, the total Built-up area is to be calculated for the entire duration of the Course with mandatory prior sanctions and approvals from Competent Authority for the entire proposal.

#The Land area required in Urban/ Rural shall be in a maximum of TWO plots. The Academic, Instructional, Administrative and Amenities area shall be in one plot not less than 1.5 Acre. The aerial distance between the plots shall not exceed 2 km. The remaining Land shall only be utilized for sporting Infrastructure/ Hostel/ Staff accommodation and related educational activities of the Institution.

Considering the hilly nature of Land in North Eastern States and the hilly regions of States such as Himachal Pradesh, Uttarakhand and Jammu and Kashmir or any area in any State declared as hilly by the concerned Government, Land shall be made available in 3 pieces which are not away from each other by more than 2 Km.

Note:

a. Starting other educational Course(s)/ Institutions (Technical/ Non-Technical) in the surplus Land arising out of the prevailing/ reduced norms of Land requirement is permissible. Further such surplus Land shall be used as per the Land use Certificate given to the Trust/ Society/ Company by the concerned authority, subject to such Course(s)/ Institutions having their own facilities to conduct such Programmes without sharing the essential facilities, such as Class Room, Laboratory etc. with the already approved Technical Institution. However, Common Amenities such as Canteen, Auditorium, Playground, Parking, etc. may be shared, provided it caters to all the students of all the Programmes.

b. Diploma and Degree Pharmacy Programme shall be permitted to run in the same Institution with the same Land area.

c. For an Institution established prior to 1994, the Land requirement should be fulfilled as per the norms existed thereon for the Programme(s)/ Course(s)/ Divisions applied. In case of any deviation from those norms, the Institution has to adhere to the existing norms at the time of seeking Extension of Approval.

d. For an Institution established after 1994, the Land requirement should be fulfilled as per AICTE norms existing at the time of establishment of the Institution for the Programme(s)/ Course(s)/ Divisions applied thereon. In case of any deviation from those norms, the Institution has to adhere to the existing norms at the time of seeking Extension of Approval.

e. If the Institution (c or d) had been given approval for more Programme(s)/ Course(s)/ Divisions later, the Land requirements as per the corresponding AICTE norms should be fulfilled. Annexure 12 of Approval Process Handbook gives Land Requirements as per AICTE norms during the previous years.

4.2 Minimum Built-up Area Requirements

a. The Institution area is divided into, Instructional area (INA, carpet area in m^2), Administrative area (ADA, carpet area in m^2), Amenities area (AMA, carpet area in m^2).

b. Access and Circulation Area (ACA) is around 25% of Built-up Area.

c. Total Built-up area in m^2 is equal to (INA+ADA+AMA) + (ACA).

d. For Post Graduate Programmes, Administrative area of Under Graduate Programmes may be shared.

e. Institutions shall have the Barrier free environment and Sports facilities as specified in the Chapter VI of Approval Process Handbook.

4.2.1 Instructional Area (Carpet Area) in m²

A. Engineering and Technology (Under Graduate/ Post Graduate Degree) Institutions

	Number of Rooms required	Carpet Area in m² per Room
Class Rooms	Total Number of Divisions x 0.75	66/ 33*
Tutorial Rooms+	25% of total Class Room	33
Laboratory for First Year	4 (which includes 2 Laboratories for Basic sciences)	66
Laboratory other than First Year	2 per Course per Year	66
Laboratory for Post Graduate Courses	1 per Course	66
	1 Research Laboratory	66
Workshop#	1	200
Additional Laboratory/ Workshop for "X" Category Courses	1	200
Drawing Hall#	1	132
Computer Centre#	1	150
Seminar Hall	1	132
Library++	1	400
Language Laboratory+	1	66

For Courses having more than 2 Divisions, additional Laboratories equivalent to the required number on pro rata basis for the said Courses shall be created.

* Applicable for Post Graduate Course only.

+ Language Laboratory shall have a minimum of 20 Computers with appropriate Software. Additional Laboratory required, if number of Divisions >5.

++ Additional Library area of 50 m² per 60 Students beyond 420 "Approved Intake".

"X" Category Courses such as Mechanical, Production, Civil, Electrical, Chemical, Textile, Marine, Aeronautical and Allied Courses shall require an Additional Laboratory/ Workshop.

Drawing Halls, Computer Centres and Workshops to be created as given below:

Approved Intake	Computer Centre	Workshop	Drawing Hall
Up to 600	1	1	1
601-1200	2	2	2
Infrastructure Requirement shall be calculated on pro rata basis for "Approved Intake" greater than 1200			

Additional Laboratories to be created (if required) as per Curriculum of the concerned affiliating University.

Under Graduate Laboratories, if shared with Post Graduate Courses shall be upgraded to meet requirements of Post Graduate Curriculum.

The Institution shall have one Smart Class Room/ Course with LCD projector, Smart Board, Internet Connection, etc.

Seminar Hall shall have proper furnishing and equipment such as LCD projector, Smart Board, PA system and Executive Chairs.

Institutions shall have MOOCS Facility Centre and Innovation/ Fab Laboratory.

B. Engineering and Technology (Diploma/ Post Diploma) Institution

	Number of Rooms required	Carpet Area in m² per Room
Class Rooms	Total Number of Divisions x 0.75	66
Tutorial Rooms+	25% of total Class Room	33
Laboratory for First Year	4 (which includes 2 Laboratories for Basic sciences)	66
Laboratory other than First Year	2 per Course per Year	66
Workshop#	1	200
Additional Laboratory/ Workshop for "X" Category Courses	1	150
Drawing Hall#	1	132
Computer Centre#	1	150
Seminar Hall	1	132
Library++	1	300
Language Laboratory+	1	66

For Courses having more than 2 Divisions, additional Laboratories equivalent to the required number on pro rata basis for the said Courses shall be created.

+Language Laboratory shall have a minimum of 20 Computers with appropriate Software. Additional Laboratory required, if number of Divisions >5.

++ Additional Library area of 50 m² per 60 Students beyond 420 "Approved Intake".

"X" Category Courses such as Mechanical, Production, Civil, Electrical, Chemical, Textile, Marine, Aeronautical and Allied Courses shall require an Additional Laboratory/ Workshop.

Drawing Halls, Computer Centres and Workshops to be created as given below:

Approved Intake	Computer Centre	Workshop	Drawing Hall
Up to 600	1	1	1
601-1200	2	2	2

Infrastructure Requirement shall be calculated on pro rata basis for "Approved Intake" greater than 1200.

Diploma Laboratories, if shared with the Under Graduate Courses shall be upgraded to meet requirements of the Under Graduate Curriculum.

Additional Laboratories to be created (if required) as per Curriculum of the concerned University/ Board.

The Institution shall have one Smart Class Room/ Course with LCD projector, Smart Board, Internet Connection, etc.

Institutions shall have Idea Implementation Centre/ Tinkering Laboratory/ Innovation Centre.

C. Pharmacy (Diploma/ Under Graduate/ Post Graduate Degree) Institution

	Number of Rooms required	Carpet Area in m² per Room
Class Rooms	Total Number of Divisions x 0.75	66/33**
Tutorial Rooms+	25% of total Class Room	33
Laboratory (for First Year UG)	4	75
Laboratory (for First Year Diploma)	3	75
Laboratory (other than First Year)	1 per Course per year	75
Laboratory for Post Graduate	1 per Specialization	75
Machine Room	1	75
Instrument Room (Second Year)	1	75
Animal House**	1	75
Computer Centre inclusive of Language Laboratory	1	75
Seminar Hall	1 per Under Graduate Institution	132
	1 per Diploma Institution	132
Library	1	150

** Applicable for Post Graduate Course only.

+ No Tutorial Rooms required for Post Graduate Courses.

Not required for Diploma Institutions.

Language Laboratory shall have a minimum of 20 Computers with appropriate Software.

Seminar Hall may be shared, if Diploma and Degree Pharmacy are offered in the same Institution.

For Post Graduate Programmes, Seminar Hall of respective Under Graduate Programme may be shared.

Under Graduate Laboratories, if shared with Post Graduate Courses shall be upgraded to meet requirements of Post Graduate Curriculum.

Diploma Laboratories, if shared with Under Graduate Courses shall be upgraded to meet requirements of Under Graduate Curriculum.

Research Laboratory is to be provided with an area of 66 m² for each Institution offering Post Graduate Courses.

The Institution shall have one Smart Class Room/ Course with LCD projector, Smart Board, Internet Connection, etc.

Seminar Hall shall have proper furnishing and equipment such as LCD projector, Smart board, PA system and Executive Chairs.

Institutions shall have MOOCS Facility Centre and Innovation/ Fab Laboratory.

D. Architecture/ Planning (Diploma/ Under Graduate/ Post Graduate Degree) Institution

	Number of Rooms required	Carpet Area in m² per Room
Class Rooms	Total Number of Divisions x 0.75	60/ 30**
Resource Centre	1	80
Computer Laboratory (for First Year)	1	60
Studio (other than First Year)	1 per Course per Year	120
Post Graduate Studio	2	60
Model making and Carpentry Workshop	1	120
Art Court	1	100
Multi-Purpose Hall	1	150
Research Laboratory+	1	60
Computer Centre	1	75
Seminar Hall	1 per Under Graduate Institution	132
	1 per Diploma Institution	132
Library	1	150
Language Laboratory	1	60

** Applicable for Post Graduate Course only.

+ Only for Institutions offering Post Graduate Courses.

For Post Graduate Courses, Seminar Hall of respective Under Graduate Course may be shared.

For Courses having more than 2 Divisions, ONE Additional Studio for each Division need to be created.

Under Graduate Laboratories, if shared with Post Graduate Courses shall be up graded to meet requirements of Post Graduate Curriculum.

Diploma Laboratories, if shared with the Under Graduate Courses shall be upgraded to meet requirements of the Under Graduate Curriculum.

Language Laboratory shall have a minimum of 20 Computers with appropriate Software.

The Institutions shall have one Smart Class Room/ Course with LCD projector, Smart Board, Internet Connection, etc.

Seminar Hall shall have proper furnishing and equipment such as LCD projector, Smart board, PA system and Executive Chairs.

Institutions shall have MOOCS Facility Centre and Innovation/ Fab Laboratory.

E. Applied Arts and Crafts (Diploma/ Under Graduate / Post Diploma/ Post Graduate Degree) Institution

	Number of Rooms required	Carpet Area in m^2 per Room
Class Rooms	1 Room per Division per Year	66/ 33**
Tutorial Rooms+	25% of total Class Room	33
Workshop/ Studio	1 per Course per Year	66
Common Workshop/ Studio	1	90
Workshop/Studio (Post Graduate Courses)	1 per specialization	66
Studio/Display Room	1	132
Craft Centre	1	66
Computer Centre	1	75
Seminar Hall	1	100
Library	1	150
Language Laboratory	1	66

+ No Tutorial Rooms Required for Post Graduate Programme.

** Applicable for Post Graduate Course only.

For Post Graduate Courses, Seminar Hall of respective Under Graduate Course may be shared.

For Courses having more than 2 Divisions, one Additional Studio for each Division need to be created.

Under Graduate Laboratories, if shared with Post Graduate Courses shall be up graded to meet requirements of Post Graduate Curriculum.

Diploma Laboratories, if shared with the Under Graduate Courses shall be upgraded to meet requirements of the Under Graduate Curriculum.

Research Laboratory is to be provided with an area of 66 m^2 for each Institution offering Post Graduate Courses.

Language Laboratory shall have a minimum of 20 Computers with appropriate Software.

Seminar Hall shall have proper furnishing and equipment such as LCD projector, Smart board, PA system and Executive Chairs.

Institutions shall have MOOCS Facility Centre and Innovation Laboratory.

F. Design (Under Graduate/ Post Graduate Degree) Institution

	Number of Rooms required	Carpet Area in m² per Room
Class Rooms	1 Room per Division per Year	100/ 50**
Tutorial Rooms+	1 per Year	33
Studio/ Workshop	1 per specialization per Year	66
Photography Laboratory	1	66
Computer Centre	1	75
Seminar Hall	1	100
Library	1	150
Language/ Audio Visual Laboratory	1	66

+ No Tutorial Rooms Required for Post Graduate Course.

** Applicable for Post Graduate Course only.

For Post Graduate Courses, Seminar Hall of respective Under Graduate Course may be shared.

For Courses having more than 2 Divisions, one Additional Studio/Workshop for each Division need to be created.

Under Graduate Laboratories, if shared with Post Graduate Courses shall be up graded to meet requirements of Post Graduate Curriculum.

The Institution shall have one Smart Class Room/ Course with LCD projector, Smart Board, Internet Connection, etc.

Language Laboratory shall have a minimum of 20 Computers with appropriate Software.

Seminar Hall shall have proper furnishing and equipment such as LCD projector, Smart Board, PA system and Executive Chairs.

Institutions shall have MOOCS Facility Centre and Innovation/ Fab Laboratory.

G. Hotel Management and Catering Technology (Diploma/ Under Graduate/ Post Graduate Degree) Institution

	Number of Rooms required	Carpet Area in m² per Room
Class Rooms	Total Number of Divisions x 0.75	66/33**
Tutorial Rooms+	25% of total Class Room	33
Laboratory (Guest Room/House Keeping/ Front Office/ Kitchen) for First Year	3	66
Laboratory (Guest Room/ House Keeping/ Front Office/ Kitchen) other than First Year	2 per Course per Year	66
Laboratory/ Guest Room for Post Graduate Programme	1 per Specialization	66
Kitchen with Dining Hall	1	132
Restaurant	2	66
Computer Centre	1	75
Seminar Hall	1	132
Library	1	150
Language Laboratory	1	66

+For Post Graduate Course, Tutorial Rooms not required.

** Applicable for Post Graduate Course only.

For Post Graduate Courses, Seminar Hall of respective Under Graduate Course may be shared.

For Courses having more than 2 Divisions, ONE Additional Laboratory for each Division need to be created.

Under Graduate Laboratories, if shared with Post Graduate Courses shall be up graded to meet requirements of Post Graduate Curriculum.

Diploma Laboratories, if shared with the Under Graduate Courses shall be upgraded to meet requirements of the Under Graduate Curriculum.

Language Laboratory shall have a minimum of 20 Computers with appropriate Software.

Research Laboratory shall be provided with an area of 66 m² for each Institution offering Post Graduate Courses.

The Institution shall have one Smart Class Room/ Course with LCD projector, Smart Board, Internet Connection, etc.

Seminar Hall shall have proper furnishing and equipment such as LCD projector, Smart board, PA system and Executive Chairs.

Institutions shall have MOOCS Facility Centre.

H. MCA Institution

	Number of Rooms required	Carpet Area in m² per Room
Class Rooms	1 per Division per Year	66
Tutorial Rooms	25% of total Class Room	33
Computer Laboratory	1	66
Computer Centre	1	150
Seminar Hall	1	132
Library	1	100

If the Institution has more than 2 Divisions, one Additional Laboratory for each Division need to be created.

Each Class Room shall be equipped with LCD projector, Smart Board, Internet Connection, etc.

Seminar Hall shall have proper furnishing and equipment such LCD projector, Smart Board, PA system and Executive Chairs.

Institutions shall have MOOCS Facility Centre and Innovation Laboratory.

I. Management (PGDM/ MBA) Institution

	Number of Rooms required	Carpet Area in m² per Room
Class Rooms	1 per Division per Year	66
Tutorial Rooms	25% of total Class Room	33
Computer Laboratory	1	66
Computer Centre	1	150
Seminar Hall	1	132
Library	1	100

Each Class Room shall be equipped with LCD projector, Smart Board, Internet Connection, etc.

Seminar Hall shall have proper furnishing and equipment such as LCD projector, Smart Board, PA system and Executive Chairs.

Institutions shall have MOOCS Facility Centre and Innovation Laboratory.

4.2.2 Administrative Area (Carpet Area) in m²

	Principal/ Director Office	Board Room	Office all inclusive	Cabin for Head of Department and Department Office	Faculty Rooms	Central Stores	Maintenance	Security	Housekeeping	Pantry for Staff	Examinations Control Office	Placement Office
Carpet Area in m² per Room	30	20	150* 300$	20	5	30	10	10	10	10	30	30
Number of Rooms required for new Technical Institution	1	1	1	-	First Year Student intake/ 15	1	1	1	1	1	1	-
Total Number of Rooms	1	1	1	1/Department	One per Faculty (as per norms) in the Institution	1	1	1	1	1	1	1

$Technical Institution having more than one Programme
* Technical Institution having one Programme

4.2.3 Amenities Area (Carpet Area) in m²

	Toilets (Ladies & Gents)	Boys Common Room	Girls Common Room	Cafeteria	Stationery Store and Reprography	First Aid cum Sick Room	Principal's quarter	Guest House	Sports Club/ Gymnasium	Auditorium/ Amphi Theatre	Boys Hostel	Girls Hostel
Carpet Area in m² per Room for the Technical Campus having more than one Program	350*	100	100	150	10	10	150	30	200	400	Adequate	Adequate
Carpet Area in m² per Room for Technical Campus having one Program	150$	75	75	150	10	10	150	30	100	250		
Number of Rooms required for the new Technical Institution	Adequate	1	1	1	1	1	-	-	-	-	-	-
Total Number of Rooms	Adequate	1	1	1	1	1	Desirable	Desirable	Desirable	Desirable	Desirable	Desirable

* Total area for the Technical Institution having more than one Programme
$ Total area for the Technical Institution having one Programme

4.2.4 Circulation Area in m²

Access and Circulation area (ACA) of 25% of sum of Instructional, Administrative and Amenities area is desired covering common walkways, staircases and entrance lobby.

Appendix 5

5.0 Norms for Books, Library facilities, Computer, Software, Internet, Printers and Laboratory Equipment for the Technical Institutions

5.1 Computers, Software, Internet and Printers

Programme		Number of PCs/ Laptop to student ratio (Minimum 20 PCs)	Legal System Software @	Legal Application Software**	LAN and Internet	Mail Server and Client	Printers including Color Printer (% of total number of PCs/ Laptops)
Engineering and Technology	Diploma	1:6	03	20	All	Desirable	5%
	Under Graduate	1:6					
	Post Graduate	1:4					
Pharmacy	Diploma	1:8	01	10	All	Desirable	5%
	Under Graduate	1:8					
	Post Graduate	1:6					
Architecture and Planning							
a. Architecture	Diploma	1:6	01	10	All	Desirable	5%*
	Under Graduate	1:6					
	Post Graduate	1:4					
b. Planning	Under Graduate	1:6	01	10	All	Desirable	5%*
	Post Graduate	1:4					
Applied Arts, Crafts and Design							
a. Applied Arts and Crafts	Diploma	1:6	01	10	All	Desirable	5%
	Under Graduate	1:6					
	Post Graduate	1:4					
b. Design	Under Graduate	1:6	01	10	All	Desirable	5%
	Post Graduate	1:4					
Hotel Management and Catering Technology	Diploma	1:6	01	10	All	Desirable	5%
	Under Graduate	1:6					
MCA	Post Graduate	1:4	03	20	All	Desirable	5%
Management	Post Graduate	1:6	01	10	All	Desirable	5%

*At least one printer to be A1 Size Color Printer/ Plotter

** Includes Plagiarism checking Software

Internet speed required for the Institution

Approved Intake	Internet speed
up to 300	32 Mbps
301 - 600	48 Mbps
601 - 900	64 Mbps
901 - 1500	100 Mbps
> 1500	200 Mbps

At least 4Mbps Wi-Fi connectivity at 4 or 5 hotspots shall be made available.

Arrangement to view NPTEL/ SWAYAM etc. shall be made available.

a. Utilization of Open Source Software shall be encouraged

b. Secured Wi-Fi facility is highly recommended

c. Purchase of the most recent hardware is desirable

d. Library, Administrative Offices and Faculty members shall be provided with exclusive computing facilities along with LAN and Internet. This shall be considered as over and above the requirement meant for PCs to students ratio

e. @Adequate number of software licenses is required

f. Central Xeroxing facility for students is preferred

g. PC shall also include Laptop in the inventory of the Institution

h. Every Department shall have separate Computer Laboratory with at least 20 Computers and a centralized Computer Laboratory with at least 100 Computers.

5.2 Laboratory Equipment and Experiments

The Laboratories shall have Equipment as appropriate for experiments as stated/ suitable for the requirements of the affiliating University/ Board's Curriculum. It is desired that the number of experimental set-up be so arranged that maximum four students shall work on one set.

5.3 Books and Library facilities

Programme	Total Number of Divisions	Titles	Volumes	Reading Room Seating	Multimedia PCs for Digital Library/ internet Surfing located in the reading room
		Number		% of Total Students	% of Total Students
Engineering and Technology/ Pharmacy/ Architecture/ Applied Arts and Crafts/ Hotel Management and Catering Technology (Diploma)	B	Half the number as required for Under Graduate Course in the same Programme	Half the number as required for Under Graduate Course in the same Programme	15 % (Max 150)	Minimum 10
Engineering and Technology (Under Graduate)	B	100#	500xB#	15 % (Maximum 150)	Minimum 10
		50 per* Course	250 per*Course		
Pharmacy (Under Graduate)	B	100#	500xB#		
		50*	500xB*		
Architecture/ Planning (Under Graduate)	B	100#	400xB#		
		50*	400xB*		
Applied Arts and Crafts/ Design (Under Graduate)	B	100#	500xB#		
		50*	500xB*		
Hotel Management and Catering Technology (Under Graduate)	B	100#	500xB#		
		50*	500xB*		
Engineering and Technology/ Pharmacy/ Architecture/ Planning/ Applied Arts and Crafts/ Design/ Hotel Management and Catering Technology (Post Graduate)	B	50#	200#	25 % (Maximum 100)	
		As$ Required	100$		
MCA/ PGDM/ MBA (Post Graduate)	B	100#	500xB#		
		50*	500xB*		

B - Number of Divisions at First year (First and Second Shifts)

1#	Book Titles and Volumes required at the time of starting a new Technical Institution equally distributed per subject.
2*	Annual Increment equally distributed per subject.
3	Total number of Titles and Volumes shall be increased in continuation till 15 years, which shall be the minimum stock of Books. Institutions shall have to add an annual increment of Books based on the changes in Curriculum and Syllabus from time to time by the affiliating University/Board.
4$	Component for additional Division/ Course.
5	Books shall also include subjects of Science, Humanities, Management and Social Science as per the requirements of the Curriculum and Syllabus.
6	Digital Library facility with multimedia facility is essential.
7	Reprographic facility in the Library is essential.
8	Document scanning facility in the Library is essential.
9	Library Books/ non Books processing as per the standard classification and cataloging system is essential.
10	Facilities to access the Online Courses is essential.
11	Library automation software including Bar coding is desirable.
12	50% of the total number of Titles and Volumes shall be in the form of e-books with intranet access is mandatory in case of Post Graduate Level Programme(s) and shall be desirable in case of UG/ Diploma Programme(s).
13	The Institution shall be a member of National Digital Library. Aggregators shall also be used.

Appendix 6

6.0 Norms for Essential and Desirable requirements of the Technical Institutions

6.1 Essential requirements of the Technical Institutions

1	Establishment of Online Grievance Redressal Mechanism as specified in the Approval Process Handbook	Essential*
2	Establishment of Anti Ragging Committee (As per All India Council for Technical Education notified Regulation for prevention and prohibition of ragging in AICTE approved Technical Institutions vide No. 37-3/ Legal/ AICTE/ 2009 dated 01.07.2009)	Essential*
3	Establishment of Grievance Redressal Committee in the Institution and Appointment of OMBUDSMAN by the University. (As per All India Council for Technical Education (Establishment of Mechanism for Grievance Redressal) Regulations, 2012, F. No. 37-3/ Lega112012, dated 25.05.2012)	Essential*
4	Establishment of Internal Complaint Committee (ICC) (As per Section 4 All India Council for Technical Education (Gender Sensitization, Prevention and Prohibition of Sexual Harassment of Women Employees and Students and Redressal of Grievances in Technical Institutions) Regulations, 2016 vide No. F. AICTE/ WH/ 2016/ 01 dated 10th June, 2016.	Essential*
5	Establishment of Committee for SC/ ST (As per the Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Act, 1989, No. 33 of 1989, dated 11.09.1989)	Essential*
6	Internal Quality Assurance Cell	Essential*
7	Barrier Free Built Environment for disabled and elderly persons (as per Chapter VI of Approval Process Handbook)	Essential
8	Fire and Safety Certificate	Essential
9	Implementation of mandatory Internship policy for students	Essential
10	Implementation of teacher training policy	Essential
11	Implementation of examination reforms	Essential
12	Implementation of student Induction Programme	Essential
13	Atleast 5 MoUs with Industries	Essential
14	Compliance of the National Academic Depository (NAD) as per MHRD directives, applicable to PGCM/ PGDM Institutions and University Departments	Essential
15	Safety and Security measures in the Campus (as per Chapter VI of Approval Process Handbook)	Essential
16	Implementation of Food Safety and Standards Act, 2006 at the Institution	Essential
17	Digital payment for all financial transactions as per MHRD directives	Essential
18	Display of information submitted to AICTE (including the accreditation status and Board of Governors) along with mandatory disclosures in the Web site of the Institution	Essential
19	Standalone Language Laboratory	Essential
20	Potable Water supply and outlets for drinking water at strategic locations	Essential
21	Electrical Grid Power Supply Connection	Essential
22	Backup Electric Supply	Essential
23	Sports facilities	Essential
24	Sewage Disposal System	Essential
25	Display board within the premises as well as on the Web site of the of Institution indicating the feedback facility of students and Faculty available in AICTE Web-Portal	Essential
26	First aid, Medical and Counselling Facilities	Essential
27	Students Safety Insurance	Essential
28	Group Accident Policy to be provided for the employees	Essential
29	General Insurance provided for assets against fire, burglary and other calamities	Essential
30	Provision to watch MOOCS Course(s) through SWAYAM	Essential
31	Road suitable for use by Motor vehicle- Motorized Road	Essential
32	Institution-Industry Cell	Essential
33	Applied for membership of National Digital Library	Essential
34	Copies of AICTE approvals (LoA and EoA of subsequent years) obtained since inception of the Institution till date shall be placed on the Web site of the Institution	Essential
35	Appointment of Student Counsellor	Essential
36	Telephone	Essential
37	Vehicle Parking	Essential
38	General Notice Board and Departmental Notice Boards	Essential

Appendix 7

7.0 Norms for Faculty requirements and Cadre Ratio for the Technical Institutions

7.1 Diploma/ Post Diploma Certificate Programme

Programme	Faculty: Student based on Approved Intake	Principal/ Director	Head of the Department	Lecturer	Total
		A	B	C	D = A+B+C
Engineering and Technology/ Architecture/ Applied Arts and Crafts/ Design/ Hotel Management and Catering Technology/ Management	1:25	1	1 per Department	(S/ 25) – (A+B)	S/25
Pharmacy	1:20	1	1 per Department	(S/ 20) – (A+B)	S/20
S - Sum of the number of students as per "Approved Intake" at all years					

7.2 Under Graduate Degree Programme

Programme	Faculty: Student based on Approved Intake	Principal/ Director	Professor	Associate Professor	Assistant Professor	Total
		A	B	C	D	A+B+C+D
Engineering and Technology	1:20	1	$\frac{S}{20xR}-1$	$\frac{S}{20xR}\times 2$	$\frac{S}{20xR}\times 6$	$\frac{S}{20}$
Pharmacy	1:15	1	$\frac{S}{15xR}-1$	$\frac{S}{15xR}\times 2$	$\frac{S}{15xR}\times 6$	$\frac{S}{15}$
Architecture and Planning						
a. Architecture	1:10	1	$\frac{S}{10xR}-1$	$\frac{S}{10xR}\times 2$	$\frac{S}{10xR}\times 6$	$\frac{S}{10}$
b. Planning	1:16	1	$\frac{S}{16xR}-1$	$\frac{S}{16xR}\times 2$	$\frac{S}{16xR}\times 6$	$\frac{S}{16}$
Applied Arts Crats and Design						
a. Applied Arts and Crafts	1:10	1	$\frac{S}{10xR}-1$	$\frac{S}{10xR}\times 2$	$\frac{S}{10xR}\times 6$	$\frac{S}{10}$
b. Design	1:10	1	$\frac{S}{10xR}-1$	$\frac{S}{10xR}\times 2$	$\frac{S}{10xR}\times 6$	$\frac{S}{10}$
Hotel Management and Catering Technology	1:20	1	$\frac{S}{20xR}-1$	$\frac{S}{20xR}\times 2$	$\frac{S}{20xR}\times 6$	$\frac{S}{20}$
S - Sum of the number of students as per "Approved Intake" for all years, R = (1+2+6)						

7.3 Post Graduate Degree Programme

Programme	Faculty: Student based on Approved Intake	Principal/ Director	Professor	Associate Professor	Assistant Professor	Total
		A	B	C	D	A+B+C+D
*Engineering and Technology	1:12	-	$\frac{S}{12xR}$	$\frac{S}{12xR}$	$\frac{S}{12xR}$	$\frac{S}{12}$
*Pharmacy						
M.Pharm.	1:10	-	$\frac{S}{10xR}$	$\frac{S}{10xR}$	$\frac{S}{10xR}$	$\frac{S}{10}$
Pharm. D.	1:15	-	$\frac{S}{15xR}$	$\frac{S}{15xR}$	$\frac{S}{15xR}$	$\frac{S}{15}$
*Architecture and Planning						
a. Architecture	1:8	-	$\frac{S}{8xR}$	$\frac{S}{8xR}$	$\frac{S}{8xR}$	$\frac{S}{8}$
b. Planning	1:10	-	$\frac{S}{10xR}$	$\frac{S}{10xR}$	$\frac{S}{10xR}$	$\frac{S}{10}$
*Applied Arts Crafts and Design						
a. Applied Arts and Crafts	1:10	-	$\frac{S}{10xR}$	$\frac{S}{10xR}$	$\frac{S}{10xR}$	$\frac{S}{10}$
b. Design	1:7.5	-	$\frac{S}{7.5xR}$	$\frac{S}{7.5xR}$	$\frac{S}{7.5xR}$	$\frac{S}{7.5}$
*Hotel Management and Catering Technology	1:12	-	$\frac{S}{12xR}$	$\frac{S}{12xR}$	$\frac{S}{12xR}$	$\frac{S}{12}$
#MCA	1:20	1	$\frac{S}{20xR}-1$	$\frac{S}{20xR}\times 2$	$\frac{S}{20xR}\times 6$	$\frac{S}{20}$
#MBA/ PGDM	1:20	1	$\frac{S}{20xR}-1$	$\frac{S}{20xR}\times 2$	$\frac{S}{20xR}\times 6$	$\frac{S}{20}$

S - Sum of the number of students as per "Approved Intake" for all years
*R = (1+1+1), In case of non-availability of qualified Professor, an Associate Professor may be considered.
#R = (1+2+6)

In Integrated Planning Course, Faculty requirement is 1:16 for the first three years and 1:10 for the next two years.

Cadre Ratio shall be 1:2:6 (Not applicable to Diploma Level).

However, Institutions Deemed to be Universities/ Institutions having Accreditation/ Autonomy status shall maintain a better Cadre ratio.

6. Norms & requirement for College of Architecture from Council of Architecture

STAFF REQUIREMENT

(Strength of full time-faculty based on sanctioned intake)

A. FULL TIME TEACHING STAFF:

YEAR	I				II				III				IV				V				Total
Intake	H	P	A pR	AP	H	P	A pR	AP	H	P	A pR	AP	H	P	A pR	AP	H	P	A pR	AP	
40	1	0	1	1	1	0	1	4	1	0	2	6	1	0	3	8	1	1	3	10	15
80	1	0	1	4	1	0	3	8	1	1	4	12	1	2	5	15	1	2	6	20	20
120	1	0	2	6	1	1	4	11	1	2	6	17	1	3	6	22	1	4	10	28	43
H-Head of institution P-Professor , APR Associates professor, AP-Assistant Professor																					

Notes:

1. Only candidates with council of Architecture (COA) under the provision of the Architecture Act, 1972 shall be eligible for the core faculty posts subject to minimum qualification and experience as prescribed in Appendix B.
2. In addition to above, approximately 25% of the teaching lead should be allotted to the visiting faculty drawn from profession.
3. Full time faculty may be recruited in the allied areas from the field of Engineering / Fine Arts/Humanities etc provided that there is a minimum of 12 crore full time faculty along with lead for an intake of 4. The faculty from allied areas shall not exceed more than 3 for an intake of 40, 6 for an intake of 80 and 8 for an intake of 120. Further, they should be appointed only at the posts of associate professor and Assistant professor in the cadre ratio of 1:2. The minimum qualifications and experience required for appointment of these faculty shall be as per AICIL/UGC Norms, as the case may be.
4. To maintain teacher / student ration of 1:10 the institution shall have requisite number of visiting faculty teaching equivalent in addition to full time teaching staff.
5. One Professor Design Chair for every intake of 40 can be appointed and shall be counted against Professor Cadre.
6. Professor Design Chair and other faculty members appointed on tenure basis cannot be considered as Head of the Institution /Principal / Dean/ Head of Department.
7. Upto 50% of the faculty members other than Professors (excluding Professor Design Chair) can be on tenure basis. The minimum duration of tenure should be 3 years.

B. NON TEACHING STAFF

S. No.	Position					Intake				Remarks
	Intake	40			80			120		
	Year of operation	I	II	III	I	II	III	I	II	III	
1.	Liberation	1	1	1	1	1	1	1	1	1	
2.	Assistant Librarian	-	-	-	-	-	-	-	-	-	Qualification As per DCC
3.	Lab / Workshop Technician	-	1	2	-	1	2	1	2	2	DESIRABLE-qualification as per UGC
24.	Administrative Personnel Accounts personnel	1 1	2 1	2 2	2 1	3 1	4 2	3 2	3 3	4 4	Min one for computer centre
5.	Class IV employees	As required									

Appendix- C

INFRASTRCUTURE REQUIREMENTS

A: SPACE

S. No.	Year of Operation	1st Year			2nd year			3rd year			4th year			5th year			Remarks
	Sanctioned of Intake	40	80	120	40	80	120	40	80	120	40	80	120	40	80	120	
	Activity spaces (carpet aea)																
	Sudio-120 sq.m	1	2	3	2	4	6	3	6	9	4	8	12	4/5	9	13	Flexibility in terms of studios spaces can be based on local conditions provided that area of 3 sq.m per student intakes is made available Studios for stage 2 of the course are to make provisions for use of laptops within internet connectivity

S. No.	Year of Operation	1st Year			2nd year			3rd year			4th year			5th year			Remarks
	Lecture rooms - 60 Sq.m each	1	2	3	1	2	3	2	4	6	2	4	6	2	4	6	If studios incorporate lecture spaces within them, then these area of studio spaces shall be calculated at 4 sq. m per student To be provided with OHP and digital projection facilities and sound amplifier system
	Labs & Workshop	1	1	1	2	2	2	3	3	3	3	4	4	3	4	4	Environmental lab, lighting and acoustic lab. Model making and carpentry workshop, material museum etc.
	Computer Centre 60 sq.m				1	1	1	1	1	1	1	1	1	1	1	1	
	Library	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	Library shall have 0.6 Sq.m per student upto total student strength of 200 and 0.3 Sq.mfor every additional student beyond student strength of 200 Libra shall be provided with reprography and scanning facilities.
	Principal Cabin	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	Administrative office - 30 Sq.m 60Sq.m	1 -	- 1	- 1	1 -	- 1	- 1	1 -	- 1	- 1	1 -	- 1	- 1	1 -	- 1	- 1	
	Staff rooms / cabins Professor 12 sq.mrach associate professor 8 sq. each Assistant professor 6 sq m each																As per the COA faculty moms in the yearly progressive fashion

	Staff Lounge 30 Sq.m / 60 Sq.m					1	1	1	1	1	1	1	1	1	1	1	Open space activity from second year onwards
	Construction yard - 200 sq.																Adequate as per building regulations
	Students Common / Rest Rooms				1	1	1	1	1	1	1	1	1	1	1	1	

Other Desirable Activity Spaces:

1. Canteen
2. Stationary Shop
3. Reprography Section and Digital printing
4. Open air theatre with stage
5. Permanent Exhibition space
6. Provision for outdoor sports facility
7. Girls Common Room.
8. Resource Center.
9. Submission and Exam Room.

Desirable Labs:

1. Climatology / Environment*
2. Surveying*
3. Materials Testing
4. Electrical / Lighting / Illumination*
5. Plumbing and Sanitation
6. Acoustics
7. Material Museum.*
8. Digital lab

Recommended Workshops

1. Model making*
2. Carpentry*
3. Fabrication workshop

Note: Labs / workshops with * are mandatory.

B: LIBRARY FACILITIES

1. Minimum 300 books on subjects of Architecture shall be available in the library

for the intake of 40 (including minimum 100 titles) at the time of 1st Inspection.

2. Add 150 books on subjects of Architecture (including minimum 50 titles) for every additional intake of 40.
3. From second year onwards, minimum 120 books on subjects of Architecture (including minimum 40 titles) for every year per intake of 40.
4. Library of old schools, having more than 5000 Titles; should acquire minimum 30 titles on subjects of Architecture per intake of 40 every year.
5. Journals and Periodicals of architectural relevance as below –

Intake/ Year	I		II		III		IV		V	
	(INT)	(NAT)	(INT)	(NAT)	(INT)	(NAT)	(INT)	(NAT)	(INT)	(NAT)
40	1	4	1	4	2	6	2	8	2	8
80 and above	1	4	2	5	2	8	4	10	4	10

Desirable: e-books and e-journals along with computer terminal with net facility for reference.

At least 2 Refereed journals (Min. 1 internati onal) per intake of 40 shall be subscribed.

Note: INT- International NAT- National

C: COMPUTER CENTER

Intake/ Year	I	II	III	IV	V
40/ 80/ 120	20	40	40	40	40

Requisite licensed software and peripherals such as printers, plotters, scanners, etc. shall be available at the computer center.

Upgrading of systems (hardware and software) shall be done every three years. Computers more than three years old shall not be counted as part of lab.

Broadband internet connectivity of appropriate bandwidth shall be available to all computers.

Desirable:

All faculty and staff shall be provided with individual/ personal computers in addition to above outlined computer center requirements.

Wifi connectivity throughout the campus freely accessible to faculty and students.

LAND REQUIREMENTS:

Minimum 8000 Sq. m. or Independent or undivided and contiguous share of land

adequate enough to provide for built floor space of 2,000 Sq. m. for intake of 40, 3,000 Sq. m. for intake of 80 and 4,000 Sq. m. for intake of 120 in Architecture degree program; provided further that the built space should be contiguous. Further, the Institution should also have sufficient space for sports, cocurricular activities and hostel, canteen and other facilities.

The land where the building of the institution is located/ built must be institutional land and must be owned by the trust / society / company.

The relaxation in the above may be made by the Council on the case to case basis for institutions located in hilly areas.

7. Guidelines for the Special Scheme of Construction of Women's Hostel for Colleges During the Twelfth Plan (2012-2017)

1. Living Rooms:
   a. Single Seater 8 to 9 Sq. M. per student
   b. Double seater 7.5 to 8 Sq. M. per student
   c. Three seater 7 to 7.5 Sq. M. per student

   For PG/Research scholars/

   Teachers/ Other staff not exceeding 10 Sq. M. per head
2. Common Room @ 2 Sq. M. per user for 25% of the hostel strength, subject to maximum of 60 Sq. M.
3. Dining Room @ 1 Sq. M. per user for 50% of the hostel strength, subject to maximum of 40 Sq. M.
4. Kitchen & Pantry @ 0.5 Sq. M. per diner subject to maximum of 60 Sq. M
5. Toilet blocks
   i) Water closet @ 1 for 8 women
   ii) Bathroom @ 1 for 6 women
   iii) Urinal @1 for 8 women
   iv) Wash basin @1 for 8 to 10 students
6. Kitchen servants — One room of 9.60 Sq. M. with WC and bathrooms.
7. Visitors' rooms — One room of 9.60 Sq. M.
8. Sick room — One room of 9.60 Sq. M.
9. Reading Room — Two reading rooms
   (Average minimum area should be @ 2.33 Sq. M. per Reader)
10. Boundary wall — around the hostel, if necessary
11. Floor height — 3.40 Mt.

8. Area requirements of North East Students Hostel at JNU Campus

दूरभाष सं 011-26167224
फैक्स सं 011-26167225

भारत सरकार
वरिष्ठ वास्तुक (दि.क्षें.)-1 का कार्यालय
के०लो०नि०वि०, ईस्ट ब्लॉक–1, तल–5, आर. के. पुरम

सं–व0वा0(दि.क्षें.)-1/ 189 /2017/572 -76 नई दिल्ली दिनांक– 24.08.2017

Subject: - Proposed Hostel for North-East students at JNU campus.

Minutes of Meeting

A meeting was held in the chamber of Senior Architect (DR)-1 on 21.08.2017 with following officers.

JNU Officers

01. Shri. Rajiev Kumar, S.E
02. Shri. Rawat, EE (E)
03. Shri.D.K. Srivastava, EE(C)
04. Shri. Dahiya AE (C)

CPWD Officers

01. Dr. Sonia Mehta, Senior Architect
02. Shri V.P.Sahu, S.E, DCC-12
03. Shri P.K. Harsh, E.E, CD-VI
04. Shri T.K. Giri, Architect

Following points were discussed:-

(1) Detailed requirement of the proposed Hostel for N.E students at JNU are as follows:-

Plinth Area = 9166 Sqm.
Construction of 4 storied two residential wing (one for boys, one for Girls)
Warden Flats = 04 at each corner
No. of Rooms = 210
No. of Students = 419
Room size = (4.30 x 3.40)
Balcony size = (3.40 x 1.00)
Dining Hall = 270 students
03 rooms for wardens office at ground floor
Provision to be made for 3 star Griha rating with rooftop solar P.V., solar water heater & rain water harvesting and other features.
Furniture of Dining Hall and Hostel room are to be as provided in existing Hostel
Cost of furniture to be included in the estimate.
It was also proposed to have some rooms at ground floor to be designed for physical handicapped person. The numbers of rooms are to be intimated by SE, JNU.

(2) Executive Engineer, CD-VI was also requested to provide enabling estimate to JNU for preparation of digitized SSP soil investigation & 3D view SE, JNU was requested to release some funds for the above work

(3) The drawings of proposed addition & alteration of international guest house at JNU were also handed over to SE, JNU.

Infrastructure Requirement for Concept Plan

A. School of Engineering

1. Programs :
   (a) B.Tech Degree " Dual Course" (5 years) = 5 No.
   Total departments = 300 students/ year
   60 students / year x 5 departments =1500 Students
   Total students = 300 students x 5 years

   (b) M.Tech (2 years) = 150 students / year
   30 Students/ year x 5 Departments

   (c) Ph. D =2000Students
   8 students x 5 Departments x 50 faculty

2. Total No. of Faculty (in 5 Departments) =250
   50 faculty x 5 Departments (50 faculty members in each department)

3. Rooms
   (a) Seminar hall
   75-100 capacity (approx.) = 5 no.
   100-150 capacity (approx.) =1 no.
   (b) Auditorium
   200-250 capacity (approx.) = 1 No.
   (c) Conference Room
   150 capacity (approx) = 1 No.
   (d) Labs = 50 No. (10no. / deptt. x 5 deptt.)
   (e) Engineering Drawing Lab =1 no.
   (f) Dean Office + staff = 1 No
   (g) HOD Office +staff = 5 No (One for each department)
   (h) Class Room / Lecture Hall :
   i) 150 capacity (approx) = 5 no.
   ii) 100 capacity(approx) =10 no.
   iii) 50 capacity (approx) =10 no.
   Total 25 no.
   (i) Faculty Lounge = 1 no.
   (j) Library hall = 1 no.
   (k) Visiting / Guest Faculty room =20 No
   (4 no. for each department ; i/c pantry &toilet)
   (l) Committee Hall (60-70 capacity approx) = 5 no.
   Including P.A. system
   (m) Canteen-cum- pantry

4. Other common Facilities :
   (a) Food Court
   (b) Shopping Complex (10 shops)(approx.)

B. School of Management and Entrepreneurship

1. Programs :
   (a) Degree Course (2 years)
   100students x 2 years = 200 students

   (b) Diploma Program
   50 Students x 1 year = 50 students

   (c) Ph. D
   50 faculty x 8 students =400 students

2. Total No. of Faculty =50 no.

3. Rooms
   (a) Committee Hall (60-70 capacity (approx)
   (b) Seminar hall / Committee Room
   120 capacity (approx) = 1 no.
   (c) Conference Room
   150-200 Capacity(approx) = 1 No.
   (d) Dean Office = 1 no.
   (e) Office = 1 no.
   (f) Class Room / Lecture Hall
   100 Student capacity = 6 No.
   (g) Visiting / Guest Faculty room = 4 no. (i/c pantry and toilet)
   (h) Faculty Lounge
   (i) Library hall
   (j) Canteen-cum- pantry
   (k) Labs =10 No.

12. Total built up area: 2.5 times of the total living area (Circulation space may be @ 25% of the plinth area)

13. Warden _____One Warden assisted by an Assistant Warden for 100 students or so. Two single rooms in the hostel for single Warden. For married Warden, not more than 115.32 Sq. M.

The above norms are suggestive and the colleges could revise it to suit the local needs.

Source : Https://Www.Ugc.Ac.In/Pdfnews/5954069_Guidelines-WH.Pdf Page 6 of Guidelines for the Special Scheme of Construction of Women's Hostel for Colleges During the Twelfth Plan (2012-2017)

9. Abstract from RFP of IIT Ropar regarding Design Details

Design Brief: Overall

The new campus will have an educational environment which would stimulate and facilitate intense and creative engagement with the processes of learning and research. It will foster the formation of a community of thinkers, scholars and concerned citizens. IIT ROPAR wishes to bring together the finest minds in an environment of creative interaction.

i. IIT ROPAR is desirous of meeting its academic mission in a manner that is socially, economically and environmentally sustainable.

ii. As an eco-campus, sustainability and environmental sensitivity shall be emphasized at all levels. The design will keep in consideration, to the extent possible use of available natural resources for renewable energy.

iii. IIT ROPAR looks forward to develop climatically responsive / energy efficient buildings with passive design features for creating better comfort conditions and reducing the energy requirements. Creating year round thermal comfort conditions is especially critical for Hostels.

iv. The consultants are free to explore various structural systems suited to their Architectural design. The ongoing construction of hostel buildings and residential quarters at IIT ROPAR new campus is being carried out with maximum of 4 storeys. The outcome of soil testing done at few locations is attached for reference.

However, the Institute may prefers to have high rise construction in order to conserve footprint for future development.

v. IIT Ropar site is situated in vicinity of river Sutlej on one side. The high flood level for Sutlej is 267.544 m at the Sutlej barrage. A bund was built after the floods in 1988; the level of bund near the campus land is around 264.075 m. The natural ground level of site is around 262.20 m to 261.2 m. The site has a relatively flat topography.

vi. The design should be responsive to create a barrier free environment for differently-abled people.

vii. The architectural character of buildings should respond to the Master Plan recommendations and the buildings under construction.

viii. IIT ROPAR looks forward for proposals with robust Architectural design, adaptable to present day need and immediate future.

The projected number of population and buildings in the document are only guidelines to provide an overview of requirement of Institute and the scope of work is not limited to it. The vision/ requirements will be shared with the shortlisted consultants. In general the following buildings are envisaged:

a) Academic Buildings:

i. Lecture Halls, Tutorial/ Class room, Virtual Studio, to have a constructed area of around 6000 sqm.

ii. Super Academic Block having Under Graduate & Post Graduate Labs, High computing/Research Facilities, Computer Center/Labs, and Research & Development Labs. Faculty Chambers and department office, Seminar/ Interaction rooms, lounge & cafeteria. This block is proposed to have a constructed area of about 25000 sqm.

iii. Workshop Block II (500 sqm)

iv. Liquid Nitrogen Plant (150 sqm)

b) Residential Buildings:

Students Residential Complex:

i. Student hostels for Boys / Girls (Single/ double seated for around 700 students), Married Accommodation for Research scholars (50 units).

ii. Dining Hall (300 capacity)

iii. Students Activity Center

Staff Residential Complex:

i. Residential facility for faculty & officers (72 nos)

ii. Residential facility for staff (56 nos) of the Institute.

c) Other:

Canteens, Utility buildings, Community Center, Medical Center, Sports facilities, other campus amenities, etc.

The Buildings should abide by the basic three dimensional configurations of facilities on the site, including land-base planning, pedestrian and traffic planning, open space planning, skyline guidelines, and layout, size and massing of major buildings finalized in the Master Plan.

The building should be architecturally compatible with the buildings constructed in the Phase I A and I B.

The buildings should be in conformity with the various parameter of the applicable Energy Conservation Building Code.

The campus has registered as GRIHA Large Development Project and has achieved 5 star rating. The building philosophy should comply with GRIHA requirements. The consultant firm is to obtain GRIHA rating from appropriate authorities.

While planning, prevailing Local/State/District/Corporation/Municipal Bye-laws etc. should be strictly followed including the Floor Area Ratio (FAR) and height stipulation, etc. It is desirable to use maximum permissible FAR. It is to bring to the notice of the consulting firms that every relaxation/ modification issued by the Local or Town planning Authority for permitting additional coverage etc. should be

10. Abstract from Expenditure Finance Committee Proposal- Establishment of New Indian Institute of Management (IIMs) dated 4th June, 2009

Chapter 5

PHYSICAL AND ACADEMIC INFRASTRUCTURE RESOURCES

5.1 PHYSICAL INFRASTRUCTURE

The physical Infrastructure required for each Institute should be as following:

(i) Class Rooms

They should be designed in a modular manner so that the built ones can be used even when the construction of the rest of them are going on. Classroom space requirements shall be as under:

Table 5.1: Class Room Space Requirement

Class Room Capacity	For 140 participants		For 560 participants	
	Number of Class Rooms	Area Sq. Mtrs	Number of Class Rooms	Area Sq. Mtrs
90 Seats	4	1500	16	6000
45 Seats	2		8	

(ii) Hostels

There should be two types of hostels. The single occupancy (SO) hostels may be the usual type hostels. The other kind should be double occupancy (D/O) hostels furnished like executive hostels to double up for management development programmes, as well. These D/O rooms can be used even during the summer period for conducting activities like faculty development programmes, research group meeting, conferences etc. to bring substantial cost efficiencies.

20

Table 5.2: Hostel Space Requirement

Kind of rooms	For 140 intake		For 560 intake	
	No. of rooms	Area Sq. Mtrs	No. of rooms	Area Sq. Mtrs
200 S/O*	200	5400	600	16200
100 D/O**	100	3600	300	10800
Total		9000		27000

* 27 Sq.mtrs per room **36 sq. mtrs per room

Each hostel should be provided with the following facilities:

- Kitchen-cum-dining hall complex;
- An attached covered shed for the parking of cycles and scooters / motorcycles and a suitable car parking area for visitor parking;
- A well-designed reception area along with a proper display board indicating room numbers and the names of occupants;
- A mail box with separate pigeon holes with locking facilities for the mail of each student;
- TV room;
- Library with an attached reading area;
- Music room;
- Table tennis room and an indoor games room – divided with a partition;
- Four activity rooms for activities such as photography, weight-lifting, art, etc. and a store for sale of small items of necessity to be operated by the students themselves, etc.;
- Dhobi room with ironing facility;
- Public phones (at least two);

- Internal telephones-one on each floor, one in the dining hall, one in Warden's office and one at the reception desk having direct inward dialing facility;
- Computer room for housing a PC cafeteria networked to the Institute Computer Centre on the Institute LAN;
- Two guest rooms for visiting male relatives;
- One guest lounge for day time visitors with an attached bathroom;
- One committee room for meetings of the hostel working committee;
- Hostel store (for furniture, left luggage, etc.)

(iii)	**Faculty Block 3 nos.** (=3*2500 sq. mtrs) (For 120 faculty)	7500 sq. mtrs
(iv)	**Dining hall for Students 2 Nos.** (2*2000 sq. mtrs.)	4000 sq. mtrs
(v)	**Staff Dining Hall**	2500 sq. mtrs
(vi)	**Administrative Building**	4000 sq. mtrs.
(vii)	**Library**	6000 sq. mtrs
(viii)	**Computer Centre**	6000 sq. mtrs
(ix)	**MDP Block**	12000 sq. mtrs
(x)	**Seminar Hall** (500 Capacity)	2000 sq. mtrs
(xi)	**Commercial Centre & Dispensary** (Will depend upon the location)	2000 sq. mtrs
(xii)	**Substation and Utility 2 nos.**	1000 sq. mtrs
(xiii)	**Residential Buildings**	
	a) **Director's Residence (1)**	350 sq.mtrs
	b) **Faculty Apartments** (20 units of 4 houses)	
	c) **Staff Accommodation** (in 2 Phases)	
	A Type 20 X 150 sq. mts.	3000 sq. mtrs
	C Type 20 X 100 sq. mtrs	2000 sq.mtrs

Total construction of each IIM can be completed in two phases. First phase is till the annual intake of 140 participants in the PGP. In the second phase the batch size

is assumed to increase up to 560. Building requirements for these two phases have been estimated and given below.

Table 5.3: Phase wise built-up areas to be completed for different constructions

Phase	Phase I (11th Plan)			Phase II (12th Plan)					In Square Meters		
Year	I	II	III	IV	V	VI	VII	VIII	Phase I	Phase II	TOTAL
Class Rooms	300	600	600	1200	1200	1200	1200	1200	1500	6000	7500
Hostels	200	3500	3500	5400	5400	5400	5400	5400	9000	27000	36000
Dining Hall for Students	400	800	800	800	800	800	800	800	200	4000	6000
Staff Dining Hall	400	800	800	-	-	-	-	-	2000	-	2000
Faculty Block	500	1000	1000	1500	1500	1500	1500	1500	2500	7500	10000
Administrative Bldg	800	1600	1600	-	-	-	-	-	4000	-	4000
Library	1200	2400	2400	-	-	-	-	-	6000	-	6000
Computer Center	1200	2400	2400	-	-	-	-	-	6000	-	6000
MDP Block	-	-	-	2400	2400	2400	2400	2400	-	12000	12000
Seminar Hall	400	800	800	-	-	-	-	-	2000	-	2000
Commercial Center & Dispensary	400	800	800	-	-	-	-	-	2000	-	2000
Substation & Utilities	100	200	200	200	200	100	-	-	500	500	1000
Director's Residence	150	150	-	-	-	-	-	-	300		300
Faculty Residences	800	1600	1600	2400	2400	2400	2400	2400	4000	12000	16000
Staff Houses A Type	300	600	600	600	600	300	-	-	1500	1500	3000
Staff Houses C Type	200	400	400	400	200	-	-	-	1000	1000	2000
Grand Total	9150	17650	17500	14900	14900	14300	13700	13700	**44300**	**71500**	115800
Cost of Civil Work @Rs.24, 910 / m2 (in Rs. Crores)	**22.8**	**44.0**	**43.6**	**37.1**	**37.1**	**35.6**	**34.1**	**34.1**	**110.4**	**178.1**	**288.5**

Total land requirement for each IIM shall be 93 acres. This has been worked out below:

The total built up area (Table 10 above)	115800 sq. Mtr
Land required for built up area (Built up are x 3)	347400 sq. Mtr
Playground	30000 sq. Mtr
Total ground area requirement	377400 sq. Mtr
	=93.25 acres
	(Say 93 acres)

5.2 EQUIPMENT AND INSTRUCTIONAL RESOURCES

The key requirements for the equipment and instructional resources required for the Institute would include the following:

- EPBAX System
- Telecommunication system
- Conference system
- Audio visual equipment in the class rooms, seminar hall and conference hall
- Overhead Projectors / LCD
- Slides projectors (fixed and mobile)
- Fax
- Telex
- Computer and distribution network system
- PCs
- Air conditioners
- All equipment for gymnasium

5.3 GAMES AND SPORTS FACILITIES

The campus must provide facilities for recreation and leisure-time activities for the faculty, support staff and their families (with a built-up area of 5000 sq.m.).

Outdoor Facilities

- Tennis courts,
- Volley ball court,
- Playfield for cricket, hockey, soccer,
- Basket ball court

Indoor Facilities

- Table tennis tables,
- Billiards (and snooker) Tables,
- Badminton courts,
- Music room,
- Carrom boards,
- Chess tables,
- Computer room,
- TV room,
- Facilities for fine arts and music.

5.4 TRANSPORT FACILITY

The provisions have been made for:

- Road network
- Vehicles
  - Cars (3)
  - Jeeps/Station Wagons
  - Buses

fully utilized while planning the scheme. Further, the buildings should comply with stipulations of codes like National Building Code, etc.

The exterior finish of the buildings should complement the design theme of Campus Master Plan, which would preferably be maintenance free and at the same time be able to use locally available construction materials in order to economize on the cost of the work and save environment.

In general the buildings should be aesthetically sound, prudent circulation area, having pleasing effect, aesthetic look, disable friendly, cost effectiveness, allowing efficient use of natural light, having minimum footprint, have flexibility of having modular/ phased development and scope for future expansion. Buildings should be sensitive and responsive to local cultural, historic and architectural precedents of Punjab and Rupnagar in particular.

11. Standard Architectural Requirements of Regional Vocational Training Institute Jhundla, Shimla

S. No.	Sub-Head	Carpet Area Requirement (in Sq. Meters)	S. No.	Sub-Head	Carpet Area Requirement (in Sq. Meters)
Administration and Allied Services (A)			(B) Workshop (CTS Courses)		
1.	Principal Room	35	1.	Fashion Technology / Fashion Design & Technology	64
2.	Vice Principal Room	17	2.	Vegetables / Fruit & Vegetable Processing	96
3.	Visitors room / Reception	23	3.	Financial Executives	50
4.	Office / Clerk Room	23	4.	Catering & Hospitality Assistance	64
5.	Committee Room	35	5.	Computer Operator & Programming Assistant	70
6.	Record Room	17	6	Designing / Interior Design & Decoration (Practicle Room 40, Computer Lab 36)	76
7.	Stationary Store Room	35			
8.	Library	70		Sub-Total CTS Courses(B)	420
9.	Canteen Kitchen cum Tifin Room	70			
10.	Placement Cell	35			
11.	Central Stores / Raw material, finished goods etc (70+35)	105		(C) Workshop (CITS Courses)	
12.	Common Room (Staff)	35			
13.	Reprographic Room	35			
14.	Electri room (As per CPWD std)	20	1.	Cutting & Sewing Fashion Tech / Dress Making	
15.	Spare Areas (Approx)	70		Computer Lab	65

Total Admn & Allied Services Area (A)		625		Sewing Lab	120
Parking Area (F) 272 Total carpet area requirement for admn cum allied services & workshops (institute building) & parking area A+B+C+D+E+F= 2601				Drafting Lab	120
				Dying & Printing Lab	50
					355
			2.	Fruit & Vegetable processing (Gen lab 120, Quality Lab 40)	160
			3.	Electronics / IT & ESM	84
2. Hostel :- (As per requirements for a Girls Hostel) 50 rooms (twin sharing) I[st] Phasealong with a provision to construct additional04 rooms (double bed) with attched toilets and bathroom) with in the ground floor of girls hostel for in service instructor coming for in service course / CTI IInd Phase 50 Rooms (Twin Sharing)			4.	Catering & Hospitality	80
			5.	Hair & Skin care / cosmetology interior decoration & designing draftsmanship	80
			6.	Civil / Arch) (Drawing Hall 100Computer tab 60)	160
				Subtotal CITS Courses (C)	919
				Total CTS & CITS Courses (B+C)	1339
3. Residential Accommodation for staff (as per CPWD norms) Type-II 04 nos (includes 02 nos for hostel warden & hostel attendant to be constructed near hostel) Type-II 02 nos. Type-II 02 nos.				. Based on syllabi (Modular pattern) revised in 2012. Based on Draftsmanship (civil/ arch CITS Course) (D) CLASSROOM - 10 NOS	
			1	Class rooms (24.5X10)	245
				(E) Provision for Extra Workshop	
4.	Guest House	01 nos.	1	Extra Workshop	120
Comprising of Two Suites					

12. Ministry of Housing & Urban Affairs Norms for GPRA, Housing for Central Government Employees and Standard Type Quarters Plan

F. No. 22011/01/2008-W.3

1.3 Revised Plinth Area Norms

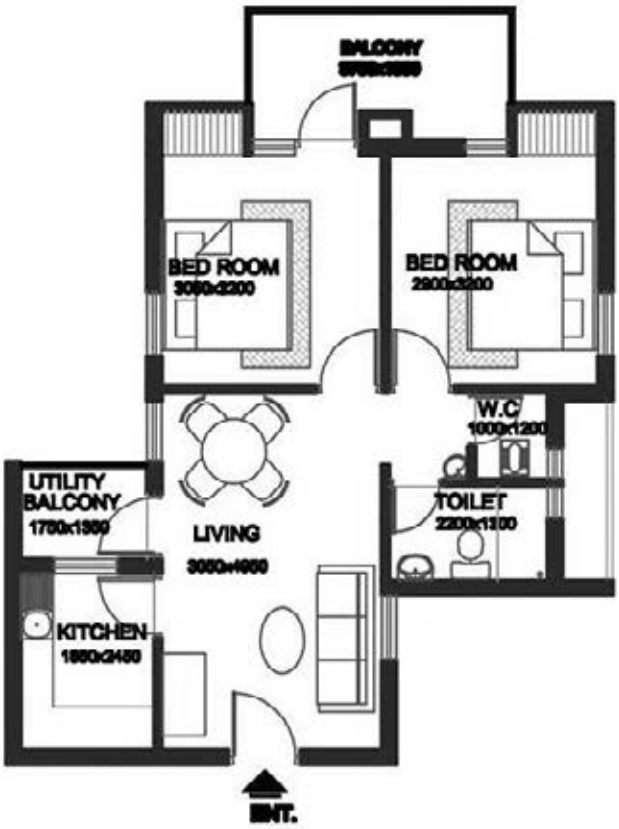
Revised Plinth Area Norms for Dwelling Units from Type- I to Type-VI and new Plinth Area Norms for Type –VII & Type VIII Quarters to be constructed for Central Govt. Employees in General Pool and its applicability to all Central Govt. Ministries / Departments shall be as per Table below:

New Plinth Area Norms – 2012 (Revised)

Type	Eligibility as / Grade Pay / Fixed Pay	Unit Area (Main)	Staircase / Circulation	Balcony	Utility area / Balcony	Remarks
		Sq. m.	Sq. m.	Sq. m.	Sq. m.	
Type- I	Rs. 1300 - 1800	40.80	7.00	6.50	2.50	
Type- II	Rs. 1900 - 2800	54.00	7.00	6.50	2.50	
Type- III	Rs. 4200 - 4800	63.00	7.00	6.50	3.50	
Type- IV Main Unit Servant Room-1	Rs. 5400 and above	86.00 17.00	7.00 -	12.00 2.50	3.50	Servant room shall be part of the house without provision of separate staircase, however Kitchenette & toilet be provided within the unit area specified for servant room.
Type- IV(Special) Main Unit Servant Room-1	Rs. 6600 and above	106.00 17.00	7.00 -	12.00 2.50	3.50	Servant room shall be part of the house without provision of separate staircase, however Kitchenette & toilet be provided within the unit area specified for servant room.
Type- V Main Unit Servant Quarter-1	Rs. 7600 and above	145.00 21.50	7.00 7.00	12.00 3.50	4.50	Independent Servant Quarter having Room, Kitchen, Toilet and separate staircase being shared by two DU's * Nos. of Quarters - 1 Nos. for Type V
Type- VI Main Unit Servant Quarter-1	Rs. 10000 and above	203.50 21.50	7.00 7.00	21.50 3.50	4.50	Independent Servant Quarter having Room, Kitchen, Toilet and separate staircase being shared by two DU's * Nos. of Quarters - 1 Nos. for Type VI
Type- VII Main Unit Servant Quarters-2	Rs. 75500(Fixed) and above	287.00 2 x21.50	7.00 7.00	35.00 4.00	9.00 -	Independent Servant Quarters having Room, Kitchen, Toilet and separate staircase being shared by two Servant quarters * Nos. of Quarters - 2 Nos. for Type VII
Type- VIII Main Unit Servant Quarters-4	Rs. 80000(Fixed) and above	403.00 4x21.50	7.00 3.50	45.00 4.00	12.00 -	Independent Servant Quarters having Room, Kitchen, Toilet and separate staircase being shared by four Servant quarters * Nos. of Quarters - 4 Nos. for Type VIII

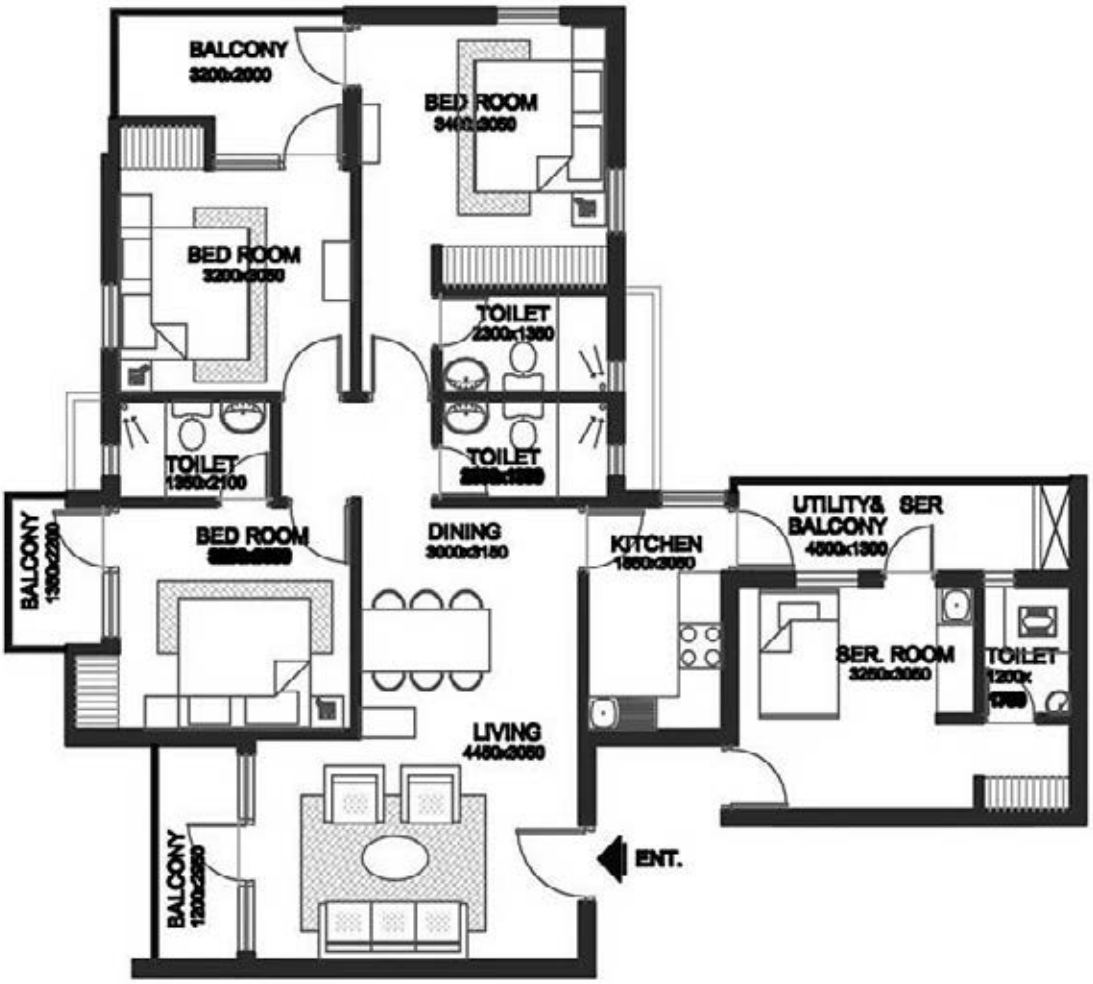
UNIT DESIGN (TYPICAL) FOR TYPE- II QRTS

(AS PER NEW NORMS)



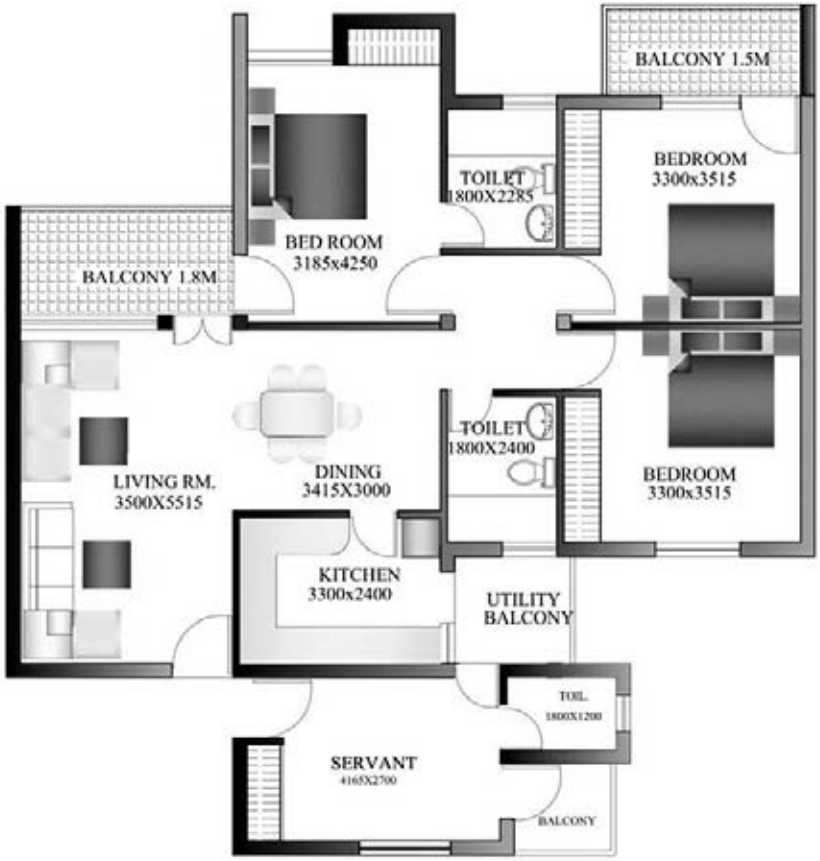
UNIT DESIGN (TYPICAL) FOR TYPE- IV QRTS

(AS PER NEW NORMS)



UNIT DESIGN FOR TYPE -4S QRTS.(TYPICAL)

AS PER NEW NORMS

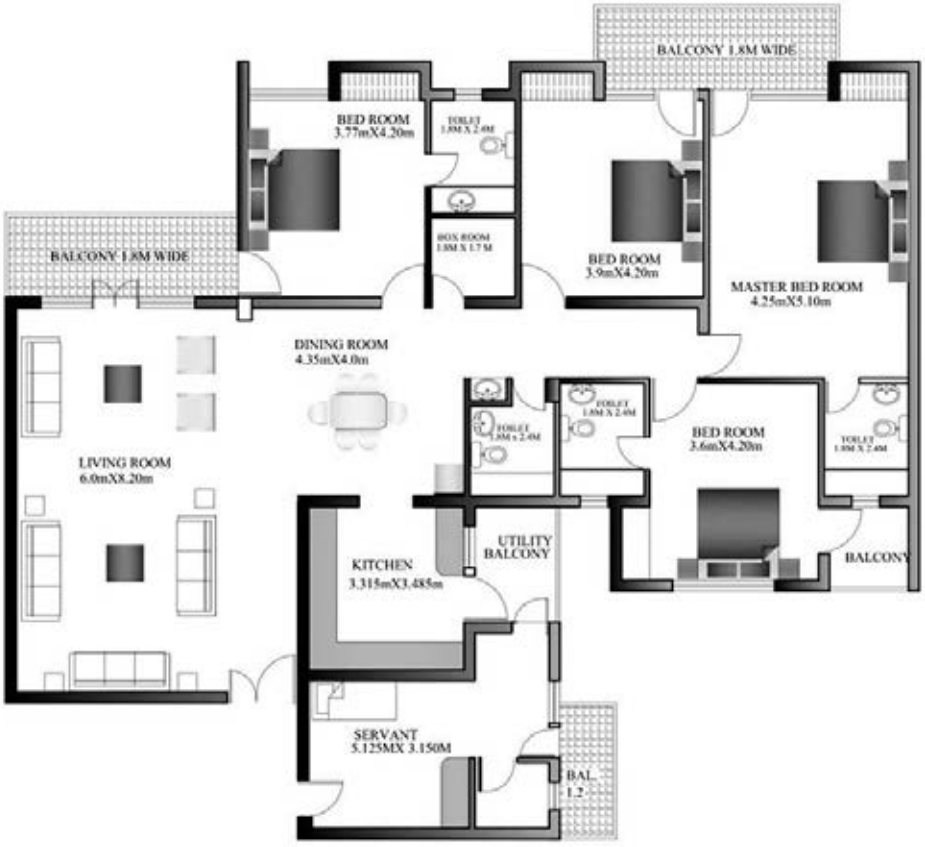


UNIT DESIGN FOR TYPE-V QRTS. (TYPICAL)

AS PER NEW NORMS

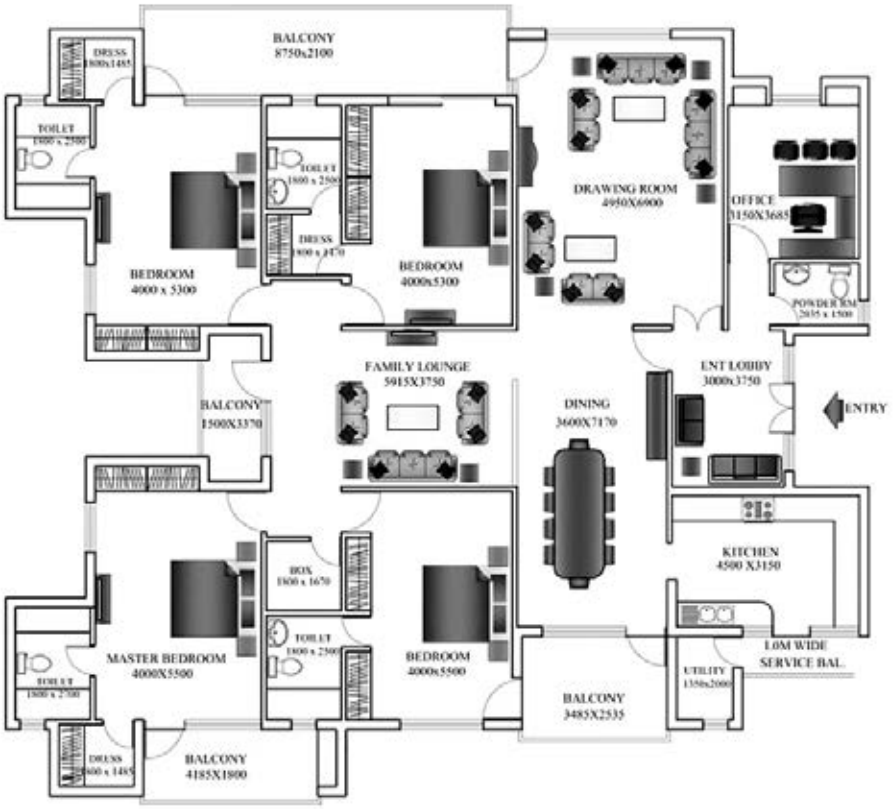
UNIT DESIGN FOR TYPE-VI QRTS.(TYPICAL)

AS PER NEW NORMS



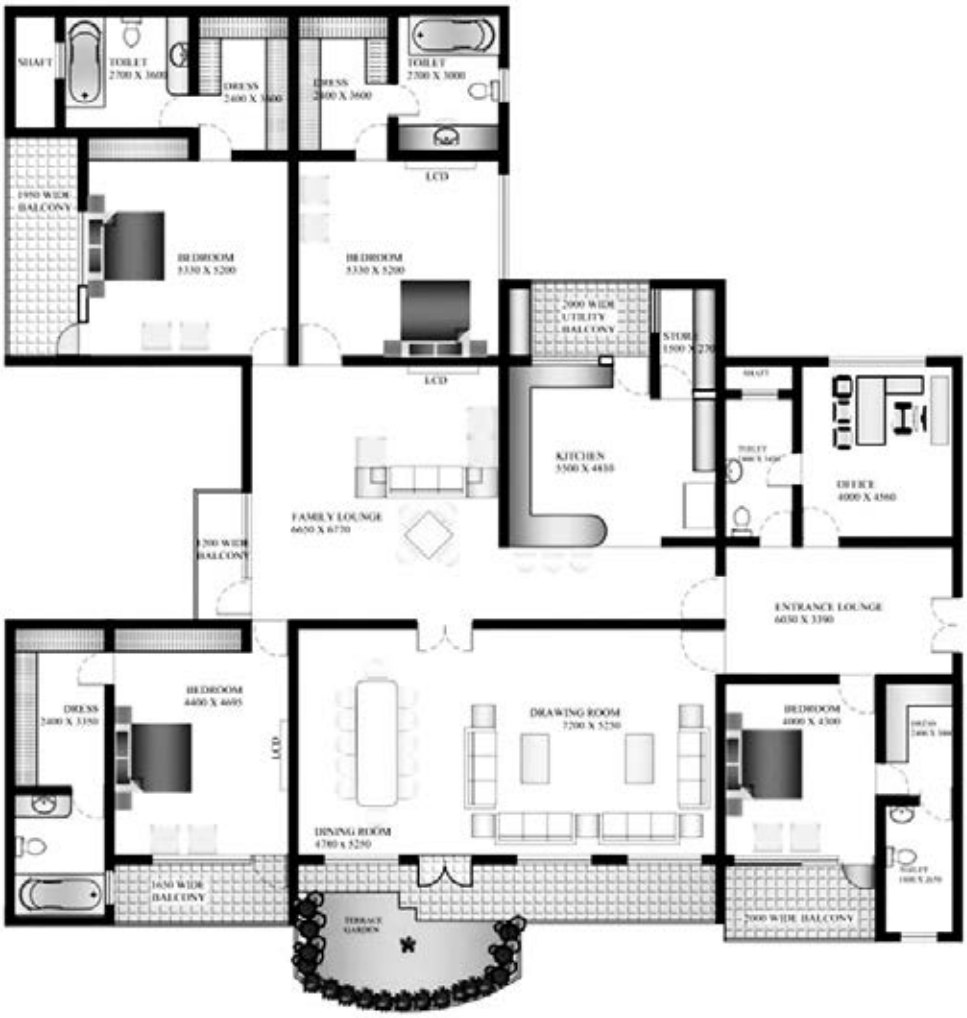
UNIT DESIGN FOR TYPE-VII QRTS. (TYPICAL)

AS PER NEW NORMS



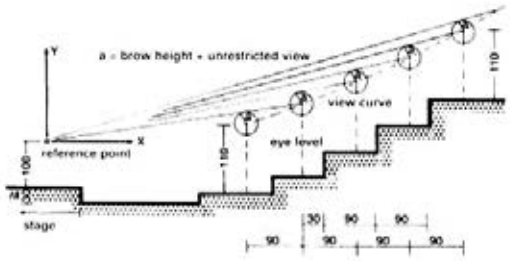
UNIT DESIGN FOR TYPE-VIII QRTS. (TYPICAL)

AS PER NEW NORMS

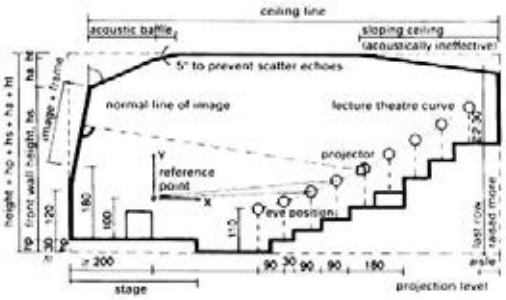


13. Reference images from Architects' data by Ernst & Peter Neufert

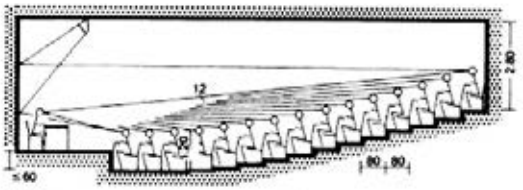
Typical Room Layouts & Dimensions:



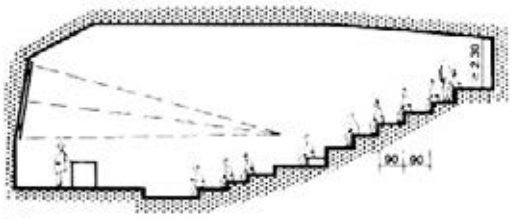
(1) **sight lines for view**



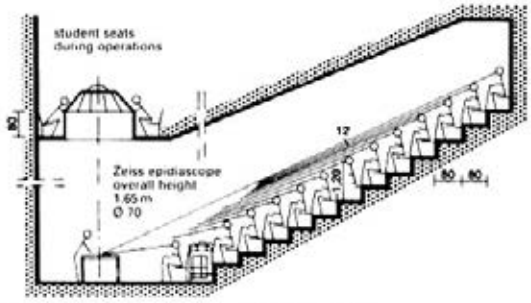
(2) **Crossection of a lecture hall**



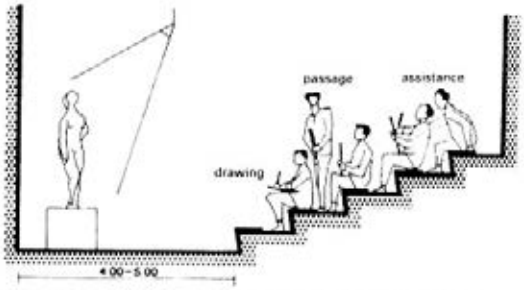
(3) **Standard lecture hall profile**



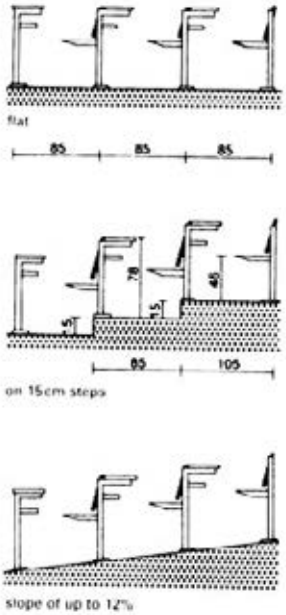
(4) **Steep slope hall**



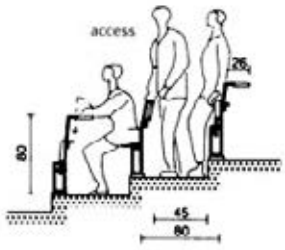
(5) **Lecture hall with demonstration table (medical)**



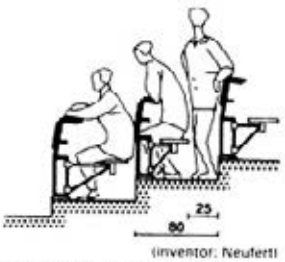
(6) **Stepping in drawing studio : 0.65sqm seating space per student**



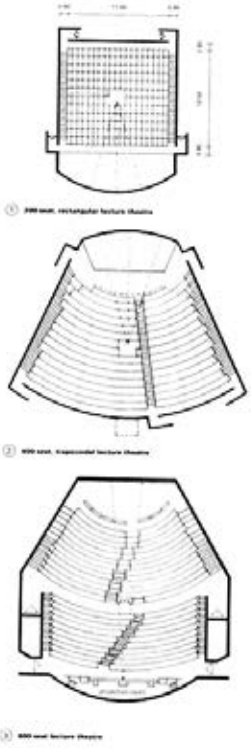
(1) **Seating for lecture hall**

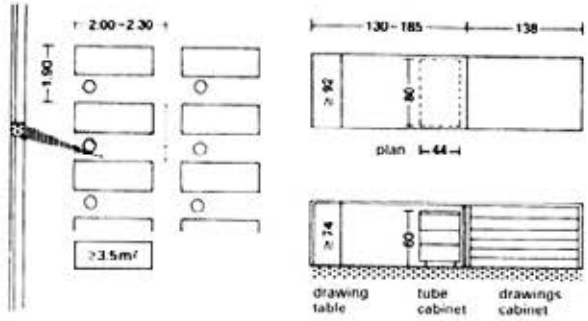


(2) **Seating arrangement with tip-up seats and writing shelves**



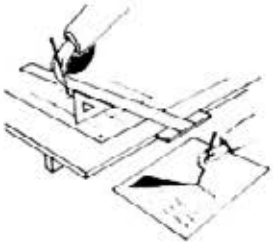
(3) **Arrangement with fixed writing shelves and swing seats**



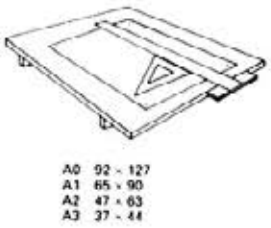


(1) Workplace in drawing room

(2) Work surface

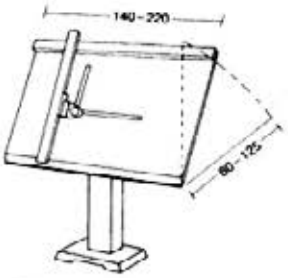


(3) Light for writing coming from behind left, and for drawing from the front left

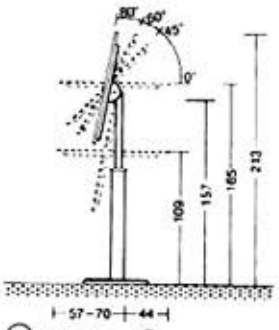


A0 92 × 127
A1 65 × 90
A2 47 × 63
A3 37 × 44

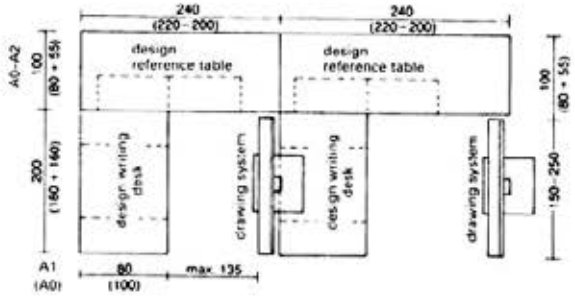
(4) Drawing board sizes



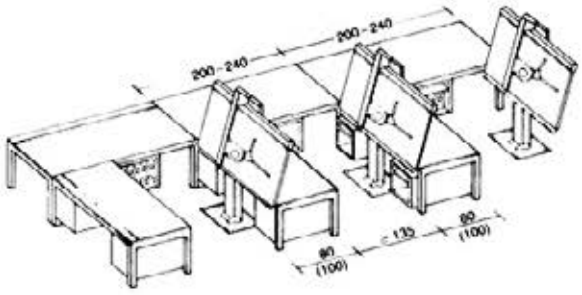
(5) Adjustable drawing table



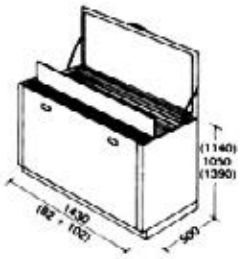
(6) Section → (5)



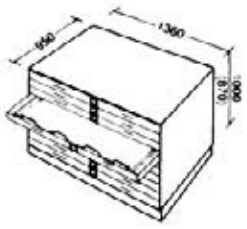
(7) Work space plan → (8)



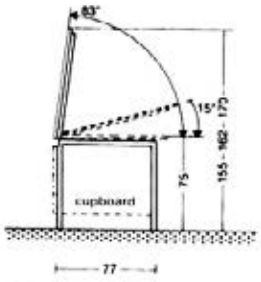
(8) Drawing office



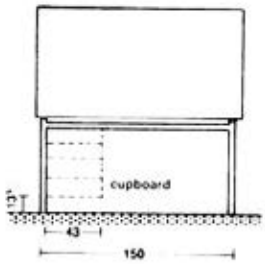
(9) Drawings stored upright



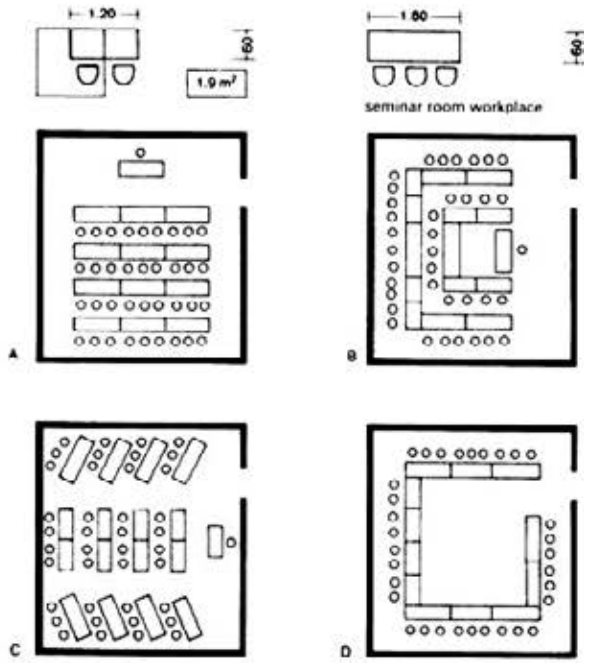
(10) Sheet steel drawings cabinet



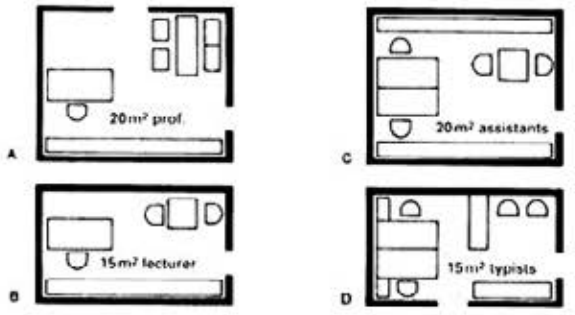
(11) Section → (12)



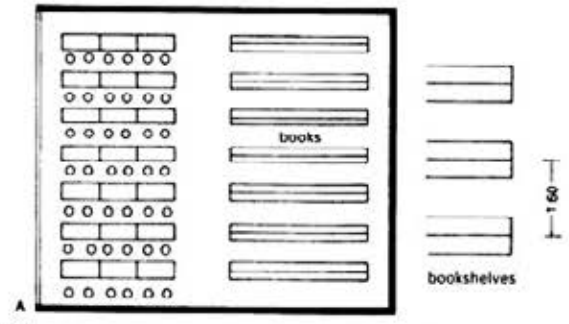
(12) Adjustable angle desk and drawing table



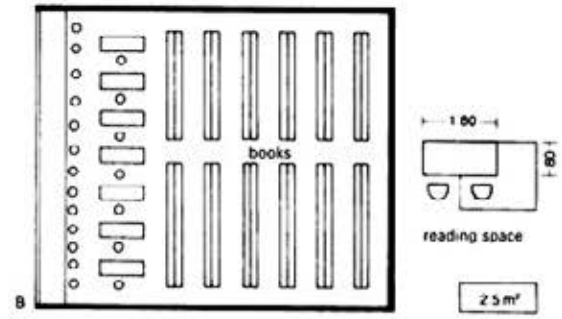
(1) **Seminar rooms, variable seating arrangements**



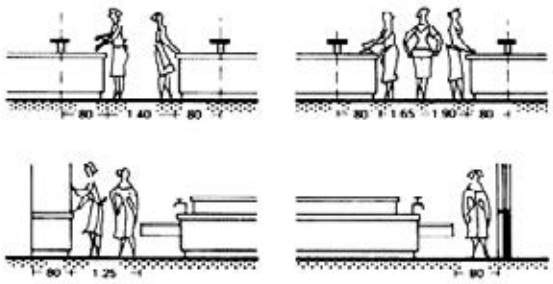
(2) **Basic offices furnishings**



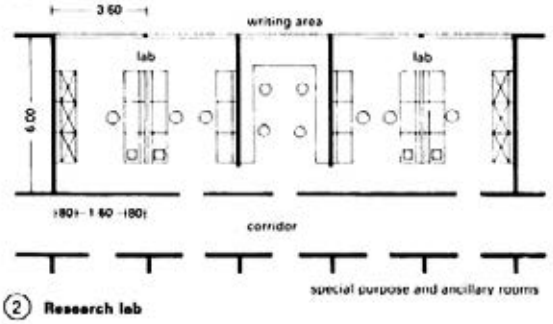
(3) **Arrangement of reading places and bookshelves**



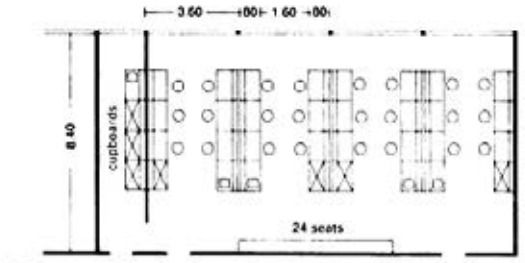
(4) **Arrangement of reading places and bookshelves**



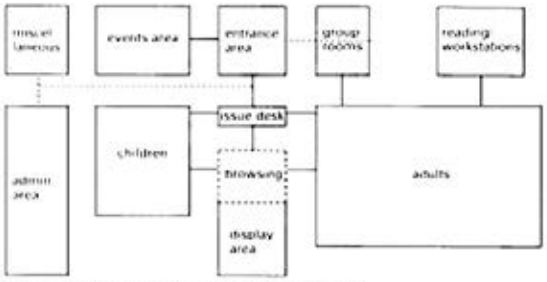
(1) **Minimum passage width between workstations**



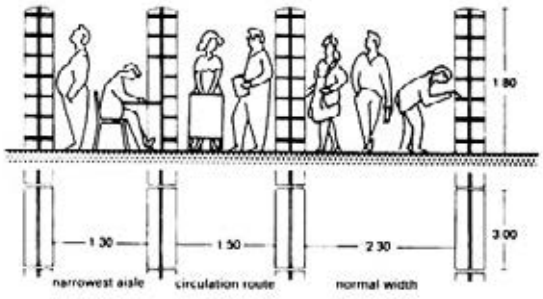
(2) **Research lab**



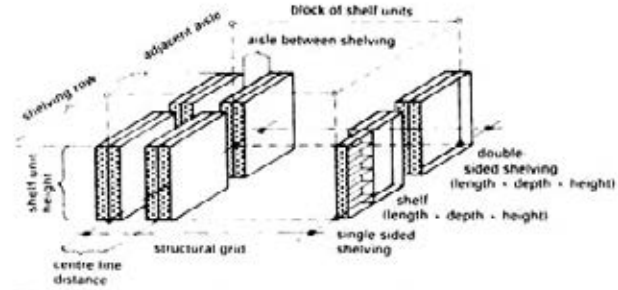
(3) **Lab for teaching and practicals**



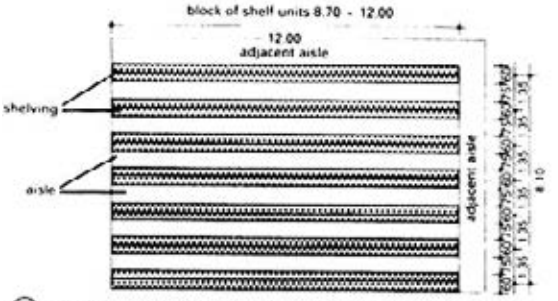
(1) **Flow chart of medium sized library**



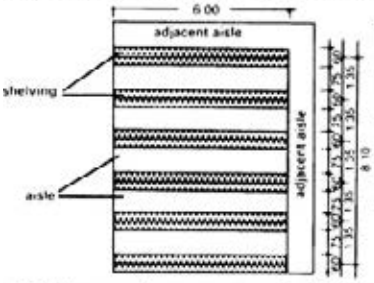
(2) **Minimum distances**



(1) **Drawing to explain terms used in calculating floor area for shelving (not to scale)**



(2) **Floor space for bookshelves in areas closed to the public**



area	centre-line distance (m)
stacks	1.35 (1.20) 1.44
open-access shelving	1.40 1.70
enquiry area and reading room	1.60 2.00

(3) **Floor area for open-access bookshelves 8.70 × 6.00 m per block of shelf units**

structural grid	7.20 m × 7.20 m	7.50 m × 7.50 m	7.80 m × 7.80 m	8.40 m × 8.40 m
n × centre line distance	6 × 1.20	6 × 1.25	6 × 1.30	6 × 1.20
	5 × 1.44	5 × 1.50	5 × 1.56	5 × 1.40
	4 × 1.80	4 × 1.87	4 × 1.95	4 × 1.68

(4) **Example distances between shelf unit centre-lines; common grids**

area	volumes per shelf
stacks	25-30
open-access shelving	20-25
enquiry area and reading room	20

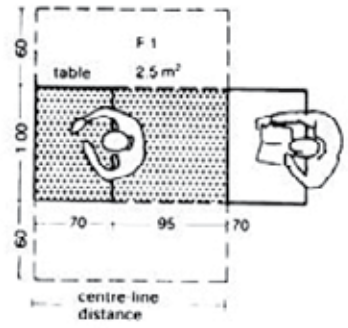
(5) **Volumes per shelf**

	structural grid							
	3.60	4.20	4.80	5.40	6.00	7.20	8.40	
stacks		1.05		1.08		1.10		1.05
open access shelving	1.20	1.20	1.20	1.10	1.20	1.20	1.20	1.12/1.2
								1.29
open access shelving		1.40	1.37	1.35	1.33	1.32	1.31	1.40
	1.44				1.50	1.47	1.44	
			1.60	1.54			1.60	1.53
		1.68				1.65		1.68
reading room	1.80			1.80	1.71		1.80	
			1.92		2.00			
		2.10					2.07	2.10
work spaces (2.25)	2.40	2.10	2.40	2.10	2.40	2.20	2.40	2.10
group work spaces	3.60	4.20	4.80	3.60	4.00	4.40	3.60	4.20

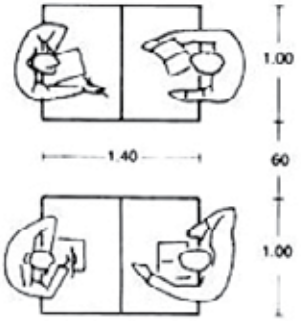
(6) **Suitability of common structural grids for fundamental library functions**

shelves above one another	7	6	5	on the basis of a book size distribution of up to 25cm 65% 25 up to 30cm 25% 30 up to 35cm 10% an assumed floor load of 7.5kN/m² results
maximum book height (cm)	25	30	35	
average book depth (cm)	18	20	22	
load per shelf	0.38	0.51	0.55	

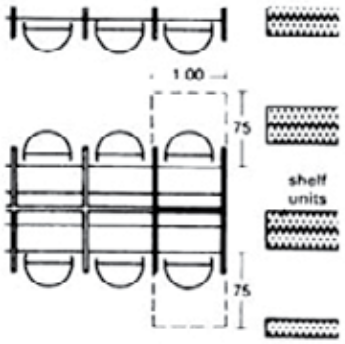
(7) **Loadings for 7.5 kN/m² book stack floors**



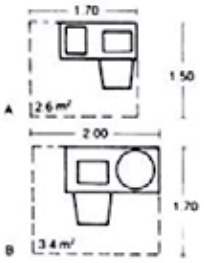
① Floor area for an individual reading room



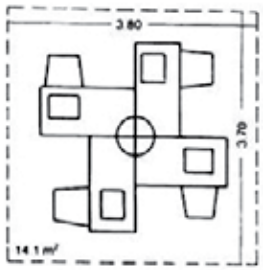
② Minimum distance between tables



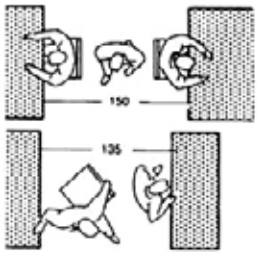
⑤ Individual study table



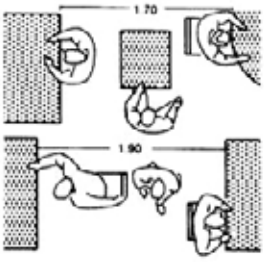
③ Photostat reading table



④ Four seat photostat reading table



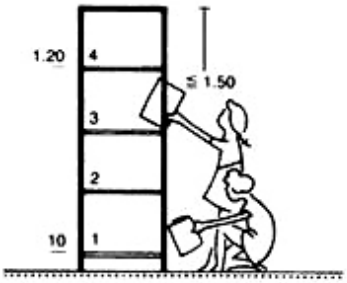
⑥ Minimum free space in reading area → ⑨



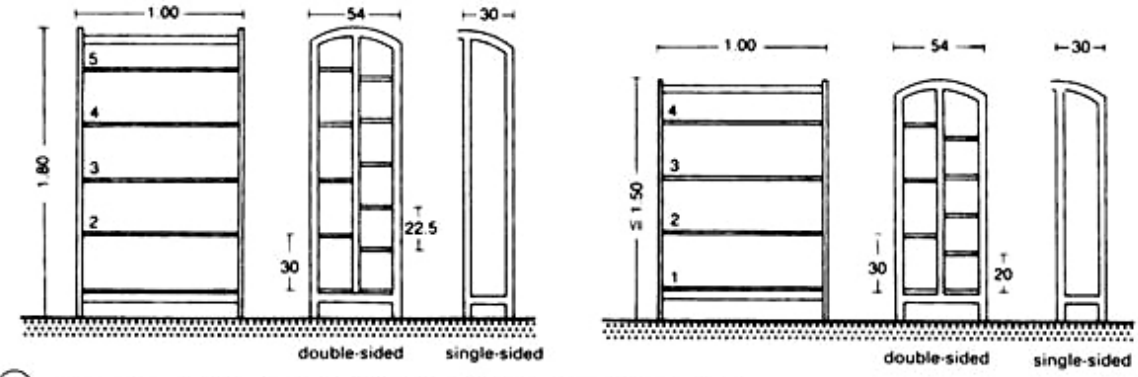
⑦ When books are moved between seated and standing users

⑧ Height of five-shelf unit

⑨ Bookshelf for schoolchildren



⑩ Height of four-shelf unit for small children



⑪ Shelf units: for adults, 5--6 shelves; for children 4--5 shelves → ⑫

14. Provisions in National Building Code-2016

	Land Area Required, Min
a) *Pre-Primary to secondary education*	
1) Pre-primary, nursery school — 1 for every 2 500 population	
i) Area per school	0.08 ha
ii) Location of pre-primary/nursery school	to be located near a park
2) Primary school (class 1 to 5) — 1 for every 5 000 population	
i) Strength of the school — 500 students	
ii) Area per school:	0.40 ha
a) School building area	0.20 ha
b) Play field area (with a minimum of 18 m × 36 m to be ensured for effective play)	0.20 ha (which is inclusive of the limited parking requirement for functional uses)
3) Senior secondary school (class 6 to 12) — 1 for every 7 500 population	
i) Strength of the school — 1 000 students	
ii) Area per school:	1.80 ha
a) School building area	0.60 ha
b) Play field area (with a minimum of 68 m × 126 m to be ensured for effective play)	1.00 ha
c) Parking area	0.20 ha
4) Integrated school without hostel facility (class 1 to 12) — 1 for every 90 000 to 100 000 population	
i) Strength of the school — 1 500 students	
ii) Area per school:	3.50 ha
a) School building area	0.70 ha
b) Play field area	2.50 ha
c) Parking	0.30 ha
iii) Location	To be located near a sport facility
5) Integrated school with hostel facilities (class 1 to 12) — 1 for every 90 000 to 100 000 population	
i) Strength of school — 1 500 students	
ii) Area per school:	3.90 ha
a) School building area	0.70 ha
b) Play field area	2.50 ha
c) Residential (including hostel area)	0.40 ha
d) Parking area	0.30 ha
iii) Location	To be located near a sport facility
6) School for children with disabilities (Class 1 to 12) — 1 for every 45 000 population	
i) Strength of the school — 400 students	
ii) Area per school:	0.70 ha
a) School building area	0.20 ha

b) Play field area	0.30 ha
c) Parking area	0.20 ha
iii) Location	To be located near a park or sport facility

NOTE — The schools should be inclusive providing education to all children including those with disabilities. However it may be required to have exclusive schools in case of certain disabilities, such as, speech, hearing, sight and multiple disabilities.

7) School for children with intellectual and developmental disabilities — 1 for every 1 000 000 population

i) Area per school	0.20 ha
ii) Location of pre-primary/nursery school	To be located near a park and non-noise polluting zone

The schools should preferably face service roads and roads with less traffic intensity.

b) *Higher education — General*

1) College — 1 for every 125 000 population

i) Strength of the college — 1 000 to 1 500 students	
ii) Area per college:	5.00 ha
a) College building area	1.80 ha
b) Play field area	2.50 ha
c) Residential (including hostel area)	0.40 ha
d) Parking area	0.30 ha

2) University campus

Area:	10.00 ha to 60.00 ha
i) Residential (if included) area	25 percent of total land area
ii) Sports and cultural activities	15 percent of total land area
iii) Parks and landscape including green belt	15 percent of total land area

c) *Technical education*

1) Technical education centre (A) — 1 for every 1 000 000 population to include 1 industrial training institute (ITI) and 1 polytechnic

i) Strength of ITI — 400 students	
ii) Strength of polytechnic — 500 students	
iii) Area per technical education centre:	4.00 ha
a) Area for ITI	1.60 ha
b) Area for polytechnic	2.40 ha

2) Technical education centre (B) — 1 for every 1 000 000 population to include 1 ITI, 1 technical centre and 1 coaching centre

Area per technical education centre:	4.00 ha
i) Area for ITI	1.60 ha
ii) Area for technical centre	2.10 ha
iii) Area for coaching centre	0.30 ha

d) *Professional education*

1) Engineering college — 1 for every 1 000 000 population

i) Strength of the college — 1 500 students	
ii) Area per college	6.00 ha

2) Medical college — 1 for every 1 000 000 population

Area of site including space for general hospital	15.00 ha

3) Nursing and paramedic institute — 1 for every 1 000 000 population

Plot area per institute (subject to Nursing Council of India/Ministry of Health Norms)	0.20 ha

occupancy in one of the following groups:

Group A	Residential
Group B	Educational
Group C	Institutional
Group D	Assembly
Group E	Business
Group F	Mercantile
Group G	Industrial
Group H	Storage
Group J	Hazardous

The details of each occupancy and example of buildings in each group are given in **3.1.2** to **3.1.10.**

3.1.1.1 *Minor occupancy*

This is purely incidental to operations in a main occupancy, which shall be considered as part of the main occupancy and shall be classified under the relevant group for the main occupancy.

3.1.1.2 *Mixed occupancy*

Where two or more types of occupancies intermingle in the same building, the entire building shall be treated as mixed occupancy and the same shall comply with **3.1.12**.

3.1.2 *Group A Residential Buildings*

These shall include any building in which sleeping accommodation is provided for normal residential purposes with or without cooking or dining or both facilities, except any building classified under Group C.

Buildings and structures under Group A shall be further subdivided as follows:

Subdivision A-1	Lodging and rooming houses
Subdivision A-2	One or two family private dwellings
Subdivision A-3	Dormitories
Subdivision A-4	Apartment houses
Subdivision A-5	Hotels
Subdivision A-6	Starred hotels

a) *Subdivision A-1 Lodging and rooming houses* — These shall include any building or group of buildings under the same management, in which separate sleeping accommodation on transient or permanent basis, with or without dining facilities but without cooking facilities for individuals is provided. This includes inns, clubs, motels and guest houses.

NOTE — A lodging or rooming house shall be classified as a dwelling in Subdivision A-2, if no room in any of its private dwelling units is rented to more than three persons.

b) *Subdivision A-2 One or two family private dwellings* — These shall include any private dwelling, which is occupied by members of one or two families and has a total sleeping accommodation for not more than 20 persons.

If rooms in a private dwelling are rented to outsiders, these shall be for accommodating not more than three persons per room.

If sleeping accommodation for more than 20 persons is provided in any one residential building, it shall be classified as a building in Subdivision A-1 or Subdivision A-4 as the case may be.

c) *Subdivision A-3 Dormitories* — These shall include any building in which group sleeping accommodation is provided, with or without dining facilities for persons who are not members of the same family, in one room or a series of closely associated rooms under joint occupancy and single management, for example, school and college dormitories, students, and other hostels and military barracks.

d) *Subdivision A-4 Apartment houses* — These shall include any building or structure in which living quarters are provided for three or more families, living independently of each other and with independent cooking facilities, for example, apartment houses, mansions and *Chawls*.

e) *Subdivision A-5 Hotels* — These shall include any building or group of buildings under single management, in which sleeping accommodation is provided, with or without dining facilities for hotels classified up to Four Star Category.

f) *Subdivision A-6 Starred hotels* — These shall include the hotels duly approved by the concerned authorities as Five Star and above hotels.

3.1.3 *Group B Educational Buildings*

These shall include any building used for school, college, other training institutions involving assembly for instruction, education or recreation for not less than 20 students.

Buildings and structures under Group B shall be further subdivided as follows:

Subdivision B-1	Schools up to senior secondary level
Subdivision B-2	All others/training institutions

a) *Subdivision B-1 Schools up to senior secondary level* — This subdivision shall

include any building or a group of buildings under single management which is used for students not less than 20 in number.

b) *Subdivision B-2 All others/training institutions* — This subdivision shall include any building or a group of buildings under single management which is used for students not less than 100 in number.

In the case of temporary buildings/structures which are utilized for educational purposes, the provisions of **3.2.5.3** shall apply.

If residential accommodation is provided in the schools/ institutions that portion of occupancy shall be classified as a building in Subdivision A-3.

3.1.4 *Group C Institutional Buildings*

These shall include any building or part thereof, which is used for purposes, such as medical or other treatment or care of persons suffering from physical or mental illness, disease or infirmity; care of infants, convalescents or aged persons and for penal or correctional detention in which the liberty of the inmates is restricted. Institutional buildings ordinarily provide sleeping accommodation for the occupants.

Buildings and structures under Group C shall be further subdivided as follows:

Subdivision C-1	Hospitals and sanatoria
Subdivision C-2	Custodial institutions
Subdivision C-3	Penal and mental institutions

a) *Subdivision C-1 Hospitals and sanatoria* — This subdivision shall include any building or a group of buildings under single management, which is used for housing persons suffering from physical limitations because of health or age and those incapable of self-preservation, for example, hospitals, infirmaries, sanatoria and nursing homes.

b) *Subdivision C-2 Custodial institutions* — This subdivision shall include any building or a group of buildings under single management, which is used for the custody and care of persons, such as children, convalescents and the aged who are incapable of self-preservation, for example, homes for the aged and infirm, convalescent homes and orphanages.

c) *Subdivision C-3 Penal and mental institutions* — This subdivision shall include any building or a group of buildings under single management, which is used for housing persons under restraint, or who are detained for penal or corrective purposes, in which the liberty of the inmates is restricted, for example, jails, prisons, mental hospitals, mental sanatoria and reformatories.

3.1.5 *Group D Assembly Buildings*

These shall include any building or part of a building, where not less than 50 persons congregate or gather for amusement, recreation, social, religious, patriotic, civil, travel and similar purposes, for example, theatres; motion picture houses; assembly halls; auditoria; exhibition halls; museums; skating rinks; gymnasiums; restaurants; places of worship; dance halls; club rooms; passenger stations and terminals of air, surface and marine public transportation services; and stadia.

Buildings under Group D shall be further subdivided as follows:

Subdivision D-1	Buildings having a theatrical or motion picture or any other stage and fixed seats for over 1 000 persons
Subdivision D-2	Buildings having a theatrical or motion picture or any other stage and fixed seats up to 1 000 persons
Subdivision D-3	Buildings without a permanent stage having accommodation for 300 or more persons but no permanent seating arrangement
Subdivision D-4	Buildings without a permanent stage having accommodation for less than 300 persons with no permanent seating arrangement
Subdivision D-5	All other structures including temporary structures designed for assembly of people not covered by Subdivisions D-1 to D-4, at ground level
Subdivision D-6	Buildings having mixed occupancies of assembly and mercantile (for example, shopping malls providing facilities such as shopping, cinema theatres, multiplexes and restaurants/food courts)
Subdivision D-7	Underground and elevated mass rapid transit system

a) *Subdivision D-1* — This subdivision shall include any building primarily meant for theatrical or operatic performances and which has a stage, proscenium curtain, fixed or portable scenery or scenery loft, lights, mechanical appliances or other theatrical

Table 3 Occupant Load

(*Clauses* 4.3 *and* 4.4.2.1)

Sl No.	Group of Occupancy	Occupant Load Factor (m^2/person) (*see* Note 1)
(1)	(2)	(3)
i)	Group A: Residential	12.50
ii)	Group B: Educational	4.00
iii)	Group C: Institutional (*see* Note 2):	
	a) Indoor patients area	15.00
	b) Outdoor patients area	10.0
iv)	Group D: Assembly:	
	a) Concentrated use without fixed seating	0.65
	b) Less concentrated use without fixed seating (*see* Note 3)	1.40
	c) Fixed seating	*see* Note 4
	d) Dining areas and restaurants with seating and table	1.80
v)	Group F: Mercantile:	
	a) Street floor and sales basement	3.00
	b) Upper sales floor	6.00
	c) Storage/warehouse, receiving and the like	20.00
vi)	Group E: Business	10.00
vii)	Group G: Industrial	10.00
viii)	Group H: Storage (*see* Note 5)	30.00
ix)	Group J: Hazardous	10.00

NOTES

1 Gross area shall be the floor area as defined in **2.35.** All factors expressed are in gross area unless marked net.

2 Occupant load in dormitory portions of homes for the aged, orphanages, insane asylums, etc, where sleeping accommodation is provided, shall be calculated at not less than 7.5 m^2 gross floor area/person.

3 These shall include gymnasium, table tennis room, billiard room and other gaming rooms, library, swimming pool and like.

4 In case of assembly occupancy having fixed seats, the occupant load shall be determined by multiplying the number of seats by 1.2.

5 Car parking areas under occupancy other than storage shall also be 30 m^2 per person.

Table 4 Capacity Factors

[*Clauses* 4.4.2.1, 4.4.2.3(c) *and* 4.4.2.4.2(a)]

Sl No.	Occupancy Group		Width per Person mm	
			Stairways	Level Components and Ramps
(1)	(2)		(3)	(4)
i)	Residential	(Group A)	10	6.5
ii)	Educational	(Group B)		
iii)	Institutional	(Group C)	15	13
iv)	Assembly	(Group D)	10	6.5
v)	Business	(Group E)		
vi)	Mercantile	(Group F)		
vii)	Industrial	(Group G)		
viii)	Storage	(Group H)		
ix)	Hazardous	(Group J)	18	10

Table 5 Travel Distance (Based on Occupancy and Construction Type)

(*Clauses* 4.4.2.1 *and* 4.4.2.2)

Sl No.	Occupancy Group	Maximum Travel Distance m	
		Types 1 and 2	Types 3 and 4
(1)	(2)	(3)	(4)
i)	Residential (Group A)	30.00	22.50
ii)	Educational (Group B)	30.00	22.50
iii)	Institutional (Group C)	30.00	22.50
iv)	Assembly (Group D)	30.00	30.00
v)	Business (Group E)	30.00	30.00
vi)	Mercantile (Group F)	30.00	30.00
vii)	Industrial (Group G)		
	G-1, G-2	45.00	*See* Note 3
	G-3	22.50	
viii)	Storage (Group H)	30.00	
ix)	Hazardous (Group J)	22.50	

NOTES

1 For fully sprinklered building, the travel distance may be increased by 50 percent of the values specified.

2 Ramp shall not be counted as an exit in case of basements below the first basement in car parking.

3 Construction of Type 3 or Type 4 is not permitted.

e) Notwithstanding the detailed provision for exits in accordance with **4.2** and **4.3**, the following minimum width shall be provided for staircases for respective occupancies:

1) Residential (A-2) : 1.00 m

NOTE — For row housing with 2 storeys, the minimum width shall be 0.75 m.

2) Residential (A-1, A-3 and A-4) : 1.25 m

3) Residential hotel (A-5 and A-6) : 1.50 m

4) Assembly : 2.00 m

NOTE — The width of stairs may be accepted to be 1.50 m in case of assembly occupancy having less than 150 persons.

5) Educational : 1.50 m

6) Institutional : 2.00 m

7) All other occupancies : 1.50 m

Table 7 — (*Continued*)

Sl No.	Type of Building Occupancy	Type of Installation								Water Supply (litre)		Pump Capacity (litre/min)	
		Fire Extinguisher	First Aid Hose Reel	Wet Riser	Down Comer	Yard Hydrant	Automatic Sprinkler System	Manually Operated Electronic Fire Alarm Systems (*see* Note 1)	Automatic Detection and Alarm System (*see* Note 2)	Under-ground Static Water Storage Tank Combined Capacity for Wet Riser, Yard Hydrant and Sprinklers per Set of Pumps	Terrace Tank over Respective Tower Terrace	Pump Near Underground Static Water Storage Tank (Fire Pump) with Minimum Pressure of 3.5 kg/cm^2 at Remotest Location	At the Terrace Tank Level with Minimum Pressure of 3.5 kg/cm^2
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2)	15 m and above but not exceeding 30 m	R	R	R	NR	R	R	R	R	150 000	20 000	(*see* Note 11)	NR
3)	Above 30 m in height	R	R	R	NR	R	R	R	R	200 000	20 000	(*see* Note 11)	NR
e)	Hotels (A-6)	R	R	R	NR	R	R	R	R	250 000	20 000	(*see* Note 12)	NR
EDUCATIONAL BUILDINGS (B) (*see* Note 16)													
1)	Less than 15 m in height												
	i) Ground plus one or more storeys	R	R	NR	NR	NR	R (*see* Note 4)	NR	NR	NR	10 000 (5 000) (*see* Note 6)	NR	450 (450) (*see* Note 6)
2)	15 m and above but not exceeding 24 m in height	R	R	NR	R	NR	R (*see* Note 4)	R	NR	NR	25 000	NR	900
3)	Above 24 m but not exceeding 30 m in height	R	R	R	NR	R	R (*see* Note 4)	R	NR	50 000	(5 000) (*see* Note 6)	(*see* Note 14)	NR
INSTITUTIONAL BUILDINGS (C) (*see* Note 16)													
a)	**Hospitals, Sanatoria and Nursing Homes (C-1)**												
1)	Less than 15 m in height with plot area up to 1 000 m^2												
	i) Up to ground plus one storey, with no beds	R	NR	NR	NR	NR	R (*see* Note 4)	R	NR	NR	(5 000) (*see* Note 6)	NR	(450) (*see* Note 6)

15. Provisions in Master Plan of Delhi-2021

MPD-2021 modified upto 31/03/2017

v. Requirement of schools and training centres for mentally and [1][differently abled persons] with differential development norms are given.

Table 13.3: Planning Norms and Standards for Education Facilities

Sl. No.	Category	Population / unit (approx.)	Plot Area
1	Primary School	10,000	[7][0.2 ha
2	Sr. Secondary School [2][/ Secondary School]	10,000	0.4 - 0.8 ha]
3	School for Mentally challenged	10.0 lakh	0.2 ha
4	School for [3][differently abled persons]	10.0 lakh	0.2 ha

Table 13.4: Development Controls for Education Facilities

Sl. No.	Category	Maximum			Other Controls
		Gr. Cov.	FAR	Height	
1	Play School, Coaching Centre, Computer-Training Institute, physical Education Centre etc.	N.A.	N.A.	N.A.	1. Practice of providing dedicated Nursery School plots in the layout plan discontinued as same is permissible in mixed use. Parking standard @ 1.33 ECS / 100 sq m of floor area. 2. In case of schools for mentally [4][challenged / differently abled persons] 20% of max. FAR can be utilized for residential use of essential staff and student accommodation. **Parking standard:** - Primary School / Middle School @ 1.33 ECS / 100 sq m of floor area. - Sr. Sec. School @ 2.00 ECS / 100 sq m of floor area. The areas earmarked for parking if misused, liable to be municipalized/ taken over. 3. Other controls related to basements etc. are given in the Development Code chapter.
2	Nursery School	33.33 %	100	15 m	
3	Primary school	30%	120	18 m	
4	Sr. Secondary School [5][/ Secondary School]	35%	150	18 m	
5	School for Mentally challenged	50%	120	18 m	
6	School for [6][differently abled persons]	50%	120	18 m	

Notes:

Pre-Primary Schools / Nursery Schools / Montessary Schools / Creche, Play Schools, are permissible in residential use premises as per Mixed use policy.

Other Controls:

[1.-6] Modified vide S.O. 2895(E) dated 23-09-2013

[7] Modified vide S.O. 3491 (E) dated 21-11-2016

1. In case of new schools, the front boundary wall shall be recessed by 6 m to accommodate visitors parking within setback area.
2. Upto 10% variation in plot size is permitted. Differential norms will be applicable to Special Area, Regularized Unauthorized Colonies, Urban Villages and Resettlement Colonies.
3. Playground shall be developed on pool basis in different areas at neighborhood level.

Table 13.5: Planning Norms and Standards for Education Facilities (Higher Education)

Sl. No.	Category	Pop./ unit (approx.)	Plot Area
1	Vocational Training Centre(ITI/ Polytechnic / Vocational Training Institute/ Management Institute/ Teacher Training Institute etc.), Research and Development centre	5.0 lakh	0.4 ha
2	General College	5.0 lakh	As per UGC norms
3	Professional College (Technical)	5.0 lakh	As per the AICTE norms.
4	University Campus including International Education Centre (IEC) – Large campus (10 ha and above) will be divided into following four parts: a) Academic including Administration (45% of total land area). b) Residential (25% of total land area). c) Sports and Cultural activities (15% of total land area). d) Parks and Landscape (15% of total land area).	4 sites in urban extension.	Upto 20.0 ha

Upto 10% variation in plot size is permitted.

Table 13.6: Development Controls for Education Facilities (Higher Education)

Sl. No.	Category	Maximum			Other Controls
		Ground Coverage	FAR	Height	
1 2	Vocational Training Centre (ITI/Polytechnic / Vocational/ Training Institute/ Management Institute/ Teacher Training Institutes etc.) / Research and Development centre. General College	35%	[1][225]	37 m	1. [2][Upto 30% of max. permissible FAR can be used for hostel accommodation for the students.] 2. Parking standard @ 1.33 ECS / 100 sq m of floor area. The areas earmarked for parking if misused liable to be municipalized / taken over by the authority. 3. Other controls related to basements etc. are given in the Development Code chapter.
3	Professional College (Technical)				

[1–2] Modified vide S.O. 2895(E) dated 23-09-2013

<table>
<tr><td>4</td><td>University Campus including International Education Centre (IEC) – Large campus (10 ha and above) will be divided into following four parts:
a) Academic including Administration (45% of total land area)</td><td>30%</td><td>[1]225]</td><td>37 m</td><td>1. Parking standard @ 1.33 ECS / 100 sq m of floor area.
2. Other controls related to basements etc. are given in the Development Code chapter.
3. Landscape plan to be prepared.</td></tr>
<tr><td></td><td>b) Residential (25% of total land area)</td><td colspan="3">1. Regulations for group housing shall apply.
2. The land shall be reserved for facilities as per residential norms.</td><td></td></tr>
<tr><td></td><td>c) Sports and Cultural activities (15%)</td><td>10%</td><td>15</td><td>26 m</td><td></td></tr>
<tr><td></td><td>d) Parks and Landscape (15%)</td><td colspan="3">N. A.</td><td></td></tr>
<tr><td>[2][5</td><td>College
i. In case of old colleges plot will be divided as follows:
Area per college : 4.0 ha
<table><tr><td>a. College Building area</td><td>1.8 ha</td><td>45%</td></tr><tr><td>b. Play field area</td><td>1.8 ha</td><td>45%</td></tr><tr><td>c. Residential including hostel area</td><td>0.4 ha</td><td>10%</td></tr></table>ii. In case of variation in area the % to be followed.</td><td colspan="4">1. Development control norms for academic college building area & residential will be same as S. No. 4 above]</td></tr>
</table>

13.3 SPORTS FACILITIES

Delhi is emerging as an important centre for National and International Sports events. Sizeable sports facilities have been developed in the City by various agencies like the Sports Authority of India (SAI), Delhi Development Authority (DDA), GNCTD, etc. However, sports activities, so far, been dealt with as a part of Recreational use. It is also felt that many of the facilities, which have been developed, could actually be seen as recreation and / or club type of facilities. As a result, even though the DDA has developed a large network of excellent sports facilities, over and above the facilities developed by the SAI, etc. there is an evident need for a properly planned and structured sports infrastructure in the city which, inter alia, should also be able to take care of mega / international sporting events, such as the forthcoming Commonwealth Games in 2010.

[1] Modified vide S.O. 2895(E) dated 23-09-2013

[2] Added vide S.O. 1215(E) dated 13-05-2013

10.	Veterinary Institute	A premise having educational and playing facilities for students of under-graduate & post-graduate courses along with research facilities under a university.	College, Residential Flat (For maintenance staff), Institutional Hostel, Retail Shops of area 20 sqm each (confectionery, grocery and general merchandise, books & stationery, chemist, barber, launderer, vegetable), Canteen, Bank Extension Counter, Auditorium, Indoor Games Hall, Swimming Pool, Play Ground, Post Office Counter Facility, Facilities for Indoor & Outdoor Treatment for Pets, Animals & Birds.
[1][11	Tertiary health care centre	A premise providing advanced health care facilities of specialised nature such as super specialty/ multi-specialty health care, types of rehabilitation centre, etc. for treatment of patients. It may be managed by public, private or charitable institution.	Hospital, Staff accommodation, patient attendant accommodation, Institutional Hostel, Health care management centre, Parking, Retail Shop (canteen, confectionery, grocery & general merchandise, books and stationery, chemist, barber, launderer, vegetable), Bank extension counter and other specific facility(ies) required for diagnosing/treatment/ rehabilitation of such patients.]

Table 13.21: Educational Facilities

Sl. No.	Use Premises	Definition	Activities Permitted
1.	Pre-Primary/ Nursery/ Montessary/ Creche & Day Care Centre	A premise having nursery facilities for infants during day time. The centre may be managed by an individual or an institution on commercial or non-commercial basis.	Creche & Day care Centre, Watch & Ward Residence (upto 20 sqm).
2.	Primary School	A premise having educational and playing facilities for students upto V standard.	Nursery School, Primary School, Watch & Ward Residence (Upto 20 sqm). Books & Stationery Shop (Upto 20 sqm.), Soft Drink & Snack Stall.
3.	Middle School	A premise having educational and playing facilities for students upto VIII standard.	Nursery School, Middle School, Watch & Ward Residence (Upto 20 sqm), Books & Stationery Shop (Upto 20 sqm.), Soft Drink and Snack Stall.
4 [1][(a)]	Senior Secondary School	A premise having educational and playing facilities for	Nursery School, Sr. Secondary School, Watch & Ward Residence (Upto 20 sqm), Books and Stationery Shop, Uniform Shop

[1] Added vide S.O. 2893(E) dated 23-09-2013

]		students upto XII standard.	(Upto 20 sqm each) Soft Drink & Snack Stall, Canteen, Bank Extension Counter, Auditorium, Indoor Games Hall, Swimming Pool, Post Office Counter Facility.
[2][4 (b)	Secondary School	A premise having educational and playing facilities for students from VI to XII standard.	Secondary School, Watch & Ward Residence (Upto 20 sqm), Books and Stationery Shop, Uniform Shop (Upto 20 sqm each), Soft Drink & Snack Stall, Canteen, Bank Extension Counter, Auditorium, Indoor Games Hall, Swimming Pool, Post Office Counter Facility.]
5.	School for Mentally challenged & [3][differently abled persons]	A premise having educational (formal and vocational) and playing facilities for mentally challenged & [4][—differently abled persons]	School, Ward & Watch Residence (Upto 20 sqm), workshop, sale counter, hostel facility (15% of permissible built up area), Books & Stationery Shop (Upto 20 sqm), Canteen, Bank Extension Counter, Post Office Counter facility, Indoor Games Hall, Upto 20% of max. FAR can be utilized for residential use of essential staff and student accommodation, office, professional activity, rehabilitation centre.
6.	College (including Professional College)	A premise having educational and playing facilities for students of under-graduate & post-graduate courses under a university. It includes all professional disciplines.	College, Residential Flat (For maintenance staff), Hostel, Retail Shops of area 20 sqm each (confectionery, grocery and general merchandise, books & stationery, chemist, barber, launderer, vegetable), Canteen, Bank Extension Counter, Auditorium, Indoor Games Hall, Swimming Pool, Playground, Post Office Counter facility.
7.	Library	A premise having a large collection of books for reading and reference for general public or specific class.	Library, Watch & Ward Residence (upto 20 sqm.), canteen, exhibition and art gallery, auditorium.
8.	Technical Training centre / Institute, Nursing and Paramedic Institute	A premise with facilities for training in discipline of technical nature. It includes technical school and industrial training institute etc.	Technical Training Centre, Residential flat (for maintenance staff), Books and stationery and chemist shops (Upto 20 sqm each) Canteen, Bank Extension counter, Auditorium, Post Office Counter facility.
9.	Vocational Training	A premise with training	Vocational Training Institute, Watch & Ward

[1–2] Added vide S.O. 2895(E) dated 23-09-2013

[3–4] Modified vide S.O. 2895(E) dated 23-09-2013

	Institute	facilities for short term courses for discipline e.g. Commercial, Secretarial, Nursing training etc., preparatory to the employment in certain profession & trade. It shall be run by public or charitable institution on non-commercial basis. It includes training-cum-work centre.	Residence (upto 20 sqm.), Hostel (only in case of Government Centres), Books & Stationery Shop (Upto 20 sqm.), Canteen, Library, Chemist Shop (Upto 20 sqm), Bank Extension Counter, Auditorium, Post Office Extension Counter Facility.
10.	Commercial and secretarial training centre	A premise having training facilities for stenography, correspondence, record keeping etc.	Commercial and secretarial training centre, Watch & Ward Residence (upto 20 sqm.), Canteen.
11.	Hotel Management Institute	A premise with training facilities for hotel management discipline. It shall be run by public/ private body. It includes training-cum-work-centre.	Hotel Management Institute, Watch & Ward Residence (Upto 20 sqm), Books and stationery and chemist shops (Upto 20 sqm each) Canteen, Bank Extension counter, Auditorium, Post Office Counter facility.
12.	Social Welfare Centre	A premise having facilities for welfare and promotion of community development. It shall be run by a public and charitable institution.	Social Welfare Centre, Watch & Ward Residence (upto 20 sqm.) canteen, Exhibition cum sale counter.
13.	Research and Development Centre	A premise providing facilities for research and development for any specific field.	Research and Development Centre, Watch & Ward Residence (upto 20 sqm.) residential flat,(For maintenance staff) Hostel, Canteen, Bank Extension counter, Library, Post Office counter facility.
14.	University Campus and International Education Centre	A premise having an educational institution designed for instruction, examination, or both, of students in many branches of advanced learning, conferring degrees in various faculties, and often embodying colleges and similar institutions.	Educational Institution, Colleges, Residential Flat (for maintenance staff), Institutional Hostel, Retail Shops of area 20 sqm each (confectionery, grocery and general merchandise, books & stationery, chemist, barber, launderer, vegetable), Residential, Library, Bank Extn. Counter, Auditorium, Post Office Extn. Counter Facility, Canteen, Indoor Games Hall.

Table 13.22: Sports Facilities

Sl. No.	Use Premises	Definition	Activities Permitted
1.	Divisional Sports Centre/ Golf Course	A premise for Outdoor and Indoor games with pavilion buildings, stadium structure for spectators and related facilities.	a. Sports related Commercial component - 5% of total floor area. b. Multiuse Stadium (Seating capacity 15,000).

16. Specifications for Residential Building as per Plinth Area Rates-2012, CPWD

SPECIFICATIONS FOR RESIDENTIAL BUILDINGS

Annexure-II

Sl. No.	Description	Latest applicable specifications				Remarks
		Type-I, II & III	Type-IV, IV (Spl.)	Type-V & VI	Type-VII & VIII	
1	**FOUNDATION**					
	Foundation & Structure	As per structural requirements	Same as Type-1, II & III	Same as Type-1, II & III	Same as Type-1, II & III	The design shall vary as per soil conditions
2	**SUPERSTRUCTURE**					
	For multi-storey framed structure	RCC framed & Filler walls of Aerated Cement Concrete (ACC) / Cellular Concrete Block (CLC) /' Brick work / Fly-ash brick	Same as Type-1, II & III	Same as Type-1, II & Type-111	Same as Type-1, II &III	Any other energy efficient suitable local material in consultation with Architect and Structural Engineer.
	For Load bearing Construction	Brick-work/stone wall / ACC /CLC as per requirement /Fly-ash brick	Same as Type-1, II & III	Same as Type-1, II & III	Same as Type-1, II &III	Any other energy efficient suitable local material in consultation with Architect and Structural Engineer.
	Internal Partition	Half brick thick masonry in ACC/CLC/Fly-ash Bricks	Same as Type-1, II&III	Same as Type-1, II &III	Same as Type-1, II & III	Any other energy efficient suitable local material in consultation with Architect and Structural Engineer
3	**DOORS AND WINDOWS**					
	a) Frames(except of toilet/bath& WC)					
	i) Door	2nd class teak wood/UPVC extruded frame sections with wall thickness minimum 2.0mm / powder coated or anodized aluminum extruded/tubular section/Engineered wood section	Same as type-1, II & III	Same as type-1, II & III	All frames external doors windows must have double rebates for Fixing of mosquito proof wire-mesh shutters on external side.	
	ii)Window	2nd class teak wood / UPVC extruded frame sections with wall thickness minimum 2.0mm/ powder coated or anodized aluminum extruded tubular section / Engineered wood section along with the provision of sub frame of suitable material.	Same as type-1, II & III	Same as type-1, II & III	Any other locally available material, with the approval of concerned Chief Architect.	

	iii) Doors & Windows of toilet/bath/ WC	2nd class teak wood/UPVC extruded frame sections with wall thickness minimum 2.0mm / powder coated or anodized aluminum extruded tubular section/ Engineered wood section	Same as Type-1, II& III	Same as Type-!. II & III		
	iv) Door /Window frames in servant area	N.A.	For servant quarters same as Type-I to Ill	For servant quarters same as Type-I to Ill		
	b) Shutters					
	i)Main Door/ External Door Shutters	Double shutters one with painted iron grill with stainless steel Grade-304mosquito proof wire mesh and other 35 mm thick factory made hardwood framed paneled shutter with melamine polish Or 35mm Thick MS tubular box section styles and rails frame with hard wood panels Or Factory made flush door	Same as Type-1 to III except that pre-laminated particle board paneling will be decorative on both sides. Or 35 mm thick factory made exterior grade both side decorative type flush door shutter with natural veneer and melamine polish.	Double shutters one Safety door in Stainless steel frame with mosquito proof S.S. wire-mesh and SS fittings and other with 35mm thick 2nd class teak wood framed paneled with decorative veneer on both sides /35 mm thick factory made exterior grade both side decorative veneered type flush door shutter with melamine polish. Or UPVC extruded section of wall thickness minimum 2.0mm framed glazed/paneled shutters For Servant quarters same as Type-1 to III.	Same as Type-V &VI	
	ii) Servant's Area	N.A.	For Servant quarters same as Type-1 to III.		For Servant quarters same as Type-1 to III.	
	Kitchen door	35mm thick shutter having 12mm thick pre-laminated (one side decorative and other side balancing) particle board panel at the bottom part and stainless steel wire mesh at upper part.	Same as Type-1, II & III	35mm thick shutter having 12mm thick both side decorative pre-laminated / veneered particle board panel/2nd class teak wood with melamine polish at the bottom part and stainless ;steel wire mesh at upper part.	Same as Type-V &VI	

	Bath , WC & Toilet Door	35 mm thick, pre-laminated flush door (one side decorative other side balancing) «	Same as Type-1 to Ill	35 mm thick, pre-laminated flush door (one side decorative other side balancing)	Some as Type-V&VI	
	Other Door	35mm thick hardwood styles and Rails with paneling with both sides' decorative pre-laminated particle board and finish in melamine polish / Factory made flush door	Same as Type 1, II & III	35 mm, thick,2nd class teakwood Styles & Rails paneled of 12mm thick both side natural wood veneer finish paneled/ Glazed paneled shutter with 5.5 mm thick float glass panes and finished in melamine polish.	Same as Type-V&VI	
	c) Window Shutters Ali windows shutters	Double shutter one with M.S. tubular box section / hardwood framed glazed panel and other with wire-mesh shutter *M*	Same as Type 1, II & III	Double shutter one with 2nd class teakwood framed glazed pane! and other with wire-mesh shutter Or UPVC extruded section of wall thickness minimum 2.0mm framed glazed / paneled shutters	Same as Type-V & VI	
	Servant's Area (Door & Windows)	N.A.	For servant quarters same as Type Ito III	For servant quarters same as Type Ito III	For servant quarters same as Type Ito II!	Shutters in all respective rooms shall be as per the finishes of Type-1 to III in those rooms
	d) Hardware & Fitting Main Units Servant's Area	Powder coated/ anodized Aluminum S.S. fittings N.A.	Powder coated/ anodized Aluminum S.S. fittings Powder coated M.S fittings.	Same as type-IV & IV special Powder coated M.S fittings.	Stainless Steel / Chromium plated brass/ Nickeled Chromium Brass. Powder coated M.S fittings.	Rubberized Door flashing at the bottom rails of all externals doors shall be provided for protection from insects and rainwater etc.
4	**FLOORING, SKIRTING & DADO**					
	Flooring living/Drawing Room, Dining & Family Lounge	Vitrified / Ceramic tile flooring of size not less than 400mm x 400mm	Vitrified tile flooring of size not less than 600mm x 600mm	18mm thick gang-saw cut pre-polished granite / marble/ stone of approved shade/ double charged vitrified tile flooring of size not less than 600x600mm Scratch resistant Engineered wood or laminated wooden flooring only in Living /drawing room. Granite, Marble, Stone & Tiles.	Same as Type V & VI	

	Office area	N.A.	N.A.	N.A.	Scratch resistant Engineered wood or laminated wooden flooring	
	Bedrooms	Scratch resistant Ceramic tiles / Vitrified tiles of size not less than 400mm x 400 mm with joints finished with matching grout	Scratch resistant Ceramic / verified tiles of size not less than 600mm x 600 mm with joints finished with matching grout	Vitrified/double charged vitrified tiles (with water absorption less than 0.08%) of size not less than 600mm X 600mmScratch resistant Ceramic tiles with joints finished with matching grout. Engineered wood or laminated wooden flooring in one bedroom.	Same as Type-V &VI	
	Kitchen	Anti skid vitrified tiles of size no less than 300x300 mm with water absorption less than 0.08% lair with joints finished with matching grout	Same as Type-1II & III	Anti skid vitrified tiles of size not less than 400x400mm with water absorption less than 0.08% laid seamless with joints finished with matching grout.	Anti-skid vitrified tiles of size not less than 600x600mm with water absorption less than 0.08% laid seamless with joints finished with matching grout	
	Kitchen Counter	Udaipur green marble/granite stone with nosing	Udaipur green marble /granite stone with nosing	18mm thick gang-saw cut pre-polished granite with nosing as per design	Same as Type-V &VI	
	Common circulation area	Mirror-polished Kota stone / locally available stone as approved by architect and matching skirting as per architectural drawing.	Same as Type-1, II &Type -III	18mm thick pre-polished granite / Vitrified tiles (with water absorption less than 0.08%) flooring not less than 600mm x600mm	18mm thick gang-saw cut pre-polished granite / marble stone of approved shade/ vitrified tiles (with water absorption less than 0.08%) size not less than 600x600 mm	
	Servant's Area (Flooring)	N.A.	For Servant quarters Same as Type 1 to III	For Servant quarters Same as Type 1 to III \	For Servant quarters Same as Type 1 to III	Finishes in all rooms shall be as per the finishes of Type-1 to III in respective rooms
	Common circulation area in servant quarters	N.A.	Mirror-polished Kota stone / locally available stone	Same as Type-IV & Type-IV(Special)	Same as Type-IV & Type-IV(Special)	Use of locally stone shall be as per approval of Chief Architect
	Staircase - Main	Pre-polished Kota stone in single length of treads & risers	Same as Type-1, II &III	18mm thick Pre-polished / honed / flamed finish Granite in single length of Treads & Risers	Same as Type-V & VI	Nosing design in treads shall be as per Architectural design

17. Specifications for Non-Residential Building as per Plinth Area Rates-2012, CPWD

SPECIFICATIONS FOR NON - RESIDENTIAL BUILDINGS

ITEM NO.	DESCRIPTION	SPECIFICATION
1.0	**FOUNDATION**	As per structural design based on soil investigation.
2.0	**SUPER STRUCTURE**	
2.1	Structure	R.C.C. framed construction with filler walls with fly ash bricks /brick work/ ACC blocks or load bearing construction in /brick work/fly ash bricks/ stone masonry with intermediate columns as per design.
2.2	Internal partitions.	
2.2.1		Light weight auto claved aerated concrete blocks.
2.2.2		Gypsum Blocks.
2.2.3		Non asbestos double skin cement boards.
2.2.4		Fly ash bricks.
3.0	**DOORS & WINDOWS**	
3.1	Frames	
3.1.1	Door frames	Door frames of 2nd class Indian teakwood or equivalent in officer's room. Anodized / Powder coated/ Polyester powder coated Aluminium sections/
3.1.2	Window frame	Standard sections of UPVC window frame members/Extruded Aluminium tubular sections
3.2	Door Window Shutters	
3.2.1	Door Shutter	Panelled type in 2nd class teak wood or flush door with teak veneered ply/ commercial ply as per CPWD Specifications/as per design.
3.2.2		Anodized/powder coated/ Polyester powder coated Aluminium shutters with toughened glass glazing/paneling where required.
3.2.3	Frame and shutters in wet area	PVC/FRP door frames & shutters in wet areas.
3.3	Window shutters	Factory made Anodised/ powder coated/ Polyester powder coated 'Z' section aluminium shutters/ standard UPVC section for windows with toughened glass glazing
3.4	Fittings	Anodized aluminium /stainless steel or equivalent.
3.5	Fire check door	As per fire safety specifications
4.0	**FLOORING**	
4.1	Main entrance hall	Pre polished granite flooring.
4.2	Corridors	Matt finished vitrified tiles/Granite flooring/combination of marble and granite
4.3	Rooms	Granite tiles/Vitrified tiles/Engineered wood flooring (in officers chambers)
4.4	Lavatory Blocks	Granite flooring.
4.5	Flooring in basement	Vacuum dewatered concrete.
4.6	Rest of the area	Kota Stone flooring.
5.0	**STAIRCASE**	
5.1	Internal staircases	Single piece Granite or marble flooring in treads & risers with dado of matching permanent finish specifications.
5.2	Fire escape staircase	Single piece Kota stone flooring in treads & risers with dado of matching permanent finish specifications.
6.0	**RAILING**	Stainless steel railings.
7.0	**TOILETS**	Granite flooring. Glazed tiles of size not less than 300 x 450/400 x 600 mm in dado upto ceiling height. Granite counters. Rimless counter sunk basins/Stainless steel sinks. Mirrors with moulded PVC frame. FRP/PVC doors with frames.

8.0	**ROOFING**	
8.1	Roof treatment	Coba treatment/over deck insulation with Puf slab.
8.2	False ceiling	False ceiling in office area & toilets to cover the services as per design requirement.
9.	**FINISHING**	
9.1	External	Dry stone cladding/washed grit plaster/water proof weather coat paints/ Structural Glazing/ ACP cladding conforming to Energy Conservation Building Code**.**
9.2	Internal	
9.2.1		Gypsum plaster in dry areas.
9.2.2		Cement plaster in wet areas
9.2.3		Dry acrylic distemper in service area & basement.
9.2.4		Acrylic emulsion paint/ Textured paint (low V.O.C)
9.2.5		Wall panelling as per approved Architecture Design upto sill level/1.2 meter, height or ceiling height.
9.3	Painting	Doors & windows – Painting/polishing on wood work as per design requirement.
10.0	**PROVISION FOR BARRIER FREE BUILDING**	Ramps, toilets for physically challenged, chequered tiles use of Braille signages & lifts etc.GRC (Glass reinforced concrete) tiles in Ramp area.

18. List of Vegetation as per Horticulture based on Different Climatic Zones of India:

List of trees and shrubs in Hot Dry area.

1. Balanitesaegyptiaca
2. Calligonumpolygonoides
3. Cordiamyxa.
4. Salvadoraoleoides
5. Ziziphusmauritiana / Ber.
6. Leptadeniapyrotechnica / kheep
7. Commiphora/ 'Guggul'.
8. Cassia angustifolia / 'Sena'.
9. Jatrophacurcas.
10. Ravoulfiaserpentina.

List of trees and shrubs in warm – humid area.

1. Royal Palm / Roystonea.
2. Mango / Mangiferaindica.
3. Tamarind / Tamarindusindica.
4. Silver oak / Grevillearobusta.
5. Hibiscus rosasinensis / Gudhal.
6. Murrayapaniculata.
7. Huracrepitans / Sandbox Tree.
8. Jacaranda Obtusifolia.
9. Mesuaferrea / Nagkesar.
10. Plumeriarubra.
11. Browneagrandiceps.
12. Ficuslyrata.
13. Hibiscus.
14. Buteamonosperma / Flame of forest
15. Cassia fistula/ Amaltas.

List of Trees and shrubs in Composite area.

1. Gulmohar / Delonixregia.
2. Mahagony / Swieteniamahagoni.
3. Banyan / Ficusbengalensis.
4. Arjuna/ Terminaliaarjuna.
5. Combretunindicum/ Honey suckle.
6. Bismarck nobilis.
7. Sita Ashok.
8. Albizialebbeck.
9. Neriumindicum.
10. Lagerstroeniaindica.
11. Sacorandamimasifolia.
12. Hibiscus.
13. Buteamonosperma / Flame of forest.
14. Cassia fistula / Amaltas.

List of trees and shrubs in Temperate area.

1. Pine.
2. Deodar.
3. Silver fir.
4. Spruce.
5. Cedar.
6. Hibiscus.

Source: Sh. B.N. Srivastva, DDG (Horticulture),CPWD

19. CPWD Green Rating Manual 2019- Criterion 1 for Architectural Planning & Design

Total Marks: 16

Synopsis: Architectural planning and design strategy has to be based on permanent features of sustainable and energy efficiency from life cycle concept simultaneously giving regard to its aesthetics and innovation. For this, passive architecture, landscape minimising hard areas, preserving existing sustainable site features, design according to existing topography and micro climate, and providing adequate shafts for better and effective maintenance are essential along with provisions made in design conforming to accessible norms, integrated services, and innovation.

Compliance Procedure and Award of Marks:

Criterion 1.1: Passive architectural design strategy

Maximum marks – 4

a) Orientation of building and window to wall ratio (WWR) including design of openings / fenestration: 2 points

b) Zoning and massing as per solar path analysis and prevailing wind direction: 1 point

c) Any other climate responsive passive architecture design strategy: 1 point

Criterion 1.2: Accessibility in Built Environment

Maximum marks – 2

a) All the norms of barrier free built environment followed: 2 points

b) More than 60% (physical not to be measured in financial terms) norms followed: 1 point

c) Less than 60% (physical) norms followed: Nil

Criterion 1.3: Availability of integrated Civil, Mechanical Electrical and Plumbing (MEP) Services and landscape drawings before invitation of bids

Maximum marks – 5

a) All drawings available: 5 points

b) Only Building drawings available without services and detailing: 2 points

c) Only architectural drawings available without detailing: 1 point

Criterion 1.4: Layout/site planning

Maximum Marks: 3

(a) Minimization of roads and hard area (if green area is minimum 60% of plot area minus building footprint area): 1 point

(b) Segregation of pedestrian and vehicular traffic: 1 point

(c) Minimum disturbance to land/site topography: 1 point

Criterion 1.5: Innovation:

Maximum marks – 2

New & innovative architectural planning and design approach shall be awarded maximum 2 marks. The assessment will be made by the team making the assessment.

References:

1. Approval Process 2019-20 from https://www.aicte-india.org/
2. Typical layout images from https://archive.org/details/Architectural_Standard_Ernst_Peter_Neufert_Architects_Data
3. COA Minimum Standards of Architectural Education, 2017 submitted to MHRD from https://www.coa.gov.in
4. Master Plan of Delhi-2021 https://dda.org.in
5. Guidelines For Planning and Construction of School Buildings of KVS (Revised -2013) from https://kvsangathan.nic.in/sites/default/files/land16.PDF
6. Benchmarking Of Chemistry Laboratory by Kendriya Vidyalaya Sangathan
7. Navodaya Vidyalaya from https://navodaya.gov.in/nvs/en/Construction/Construction-Activities/
8. Guidelines For School Infrastructure And Strengthening (Civil Works) Issued by Ministry of Human Resource Department(December -2014) from http://rmsaindia.org
9. Affiliation byelaws 2018(October -2018) from http://cbseaff.nic.in/cbse_aff/attachment/onlineservices/affiliation-Bye-Laws.pdf

Contributors:

1. Dr. Sonia Mehta, Chief Architect (NDR), CPWD
2. Sh. Subrata Maitra, Senior Architect (NDR-I), CPWD
3. Sh. Manish Kumar, Superintending Engineer, Director (S & D), CPWD
4. Sh. A. K. Singh, Superintending Engineer (Civil), CPWD
5. Sh. K. S. Gaur, Director (Tech & PR)
6. Sh. Abhijeet Vardhan, Architect, o/o CA(NDR), CPWD
7. Sh. Sachin Sharma, Deputy Architect, o/o CA(NDR), CPWD
8. Sh. A. Singaravelan, Deputy Architet o/o SA(NDR-I), CPWD
9. Sh. Dhanabalan C., Deputy Architect, o/o SA(HQ), CPWD
10. Smt. Shahna Shamim, Assistant Architect o/o CA (NDR), CPWD - Cover Page Credit

Disclaimer:

This compendium Architectural Norms & guidelines for educational institutions has been done for general guidelines, information & assistance to designers & clients.

CPWD

Government of India
Ministry of Housing and Urban Affairs

CENTRAL PUBLIC WORKS DEPARTMENT