

# DPEP KERALA STATE

CIVIL WORKS MANUEL

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GENERAL EDUCATION DEPARTMENT  
GOVT. OF KERALA

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National Institute of Educational  
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1994-95

DISTRICT PRIMARY EDUCATION PROJECT

KERALA STATE

CIVIL WORKS MANUAL

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## I. INTRODUCTION

District Primary Education Programme is sponsored by the GOVERNMENT OF INDIA with external assistance of World Bank Mission. The WORLD BANK MISSION had a pre-appraisal discussion with the officials of the State Government and the GOVERNMENT OF INDIA on the implementation of the Project. On the basis of the pre-appraisal, specific remarks were rendered in Civil Works by the WORLD BANK TEAM MEMBERS in-charge of Civil Works.

MALAPPURAM, KASARAGODE & WAYANAD are the project Districts identified for this programme. This report envisages to cover various aspects of implementation of the Civil Works component of the project.

## II. PURPOSE OF THE PROJECT

The project contemplates augmenting, or providing afresh, civil infrastructural facilities in conformity with the guidelines laid down by the WORLD BANK TEAM. These are distinct areas of proposed development.

### 1. New Schools:

For the purpose of the proposed new schools, a single storey 5 Class rooms building with 36 m<sup>2</sup> area each with a 1.5 m wide verandah and separate rooms for Headmaster and staff with attached toilet facilities will be provided. Separate toilet blocks will also be provided for Girls and Boys. Future

vertical expansion will be rendered possible by providing a staircase. There are also Primary Schools now being run in rented buildings. Accommodation in the above lines will be provided for each schools also to the extent required.

2. Augumentation of Accommodation for existing school

There are several schools with over crowded class rooms accommodating twice or more of students than that stipulated in K.E.R. for the meaningful impartation of education. Additional Class rooms to conform to the standard requirement will be provided in such areas.

3. Renovation of existing buildings including Provision of separation walls

There are several schools with dilapidated buildings which require extensive repairs and maintenance works. Such buildings are proposed to be repaired and maintenance works done to make them fit for occupation. Accommodation of schools, though having permanent requisite standards, are often in the nature of halls. This is a hindrance to smooth functioning of different class rooms and a cause of distraction to the students and teacher in the Class room. It is proposed to construct separation walls for each class room to setright the above situation.

#### 4. Construction of Urinal-cum-Toilet Block

The schools which are deficient in the required facilities of Urinals-cum-Toilets will be provided with necessary urinals-cum-toilet blocks.

#### 5. Construction of Compound Wall

The necessity of a compound wall in view of the protection of the property from encroachments and stray cattle as also the security of students has mostly been overlooked mainly due to budgetary constraints. This project also proposes to fulfil such gaps.

#### 6. Opening of Non-formal Education Centres

In area identified for such centres single class room accommodation will be provided as per the standards.

#### 7. Opening of Gurukulam Schools

For opening of Gurukulam Schools the following Civil Works infrastructure will be provided.

(a) A single storey 5 Class room building with 1.5 M wide varandah and separate staff room and Headmaster's room with attached toilet facilities will be constructed. In addition there will also be

a library room and equipment room. Separate Urinal-cum-toilet block will also be provided for Girls and Boys. It is also proposed to construct a Hostel building to accommodate 120 children in a three-in-one room pattern. The building will be in three storeys with an annexure of a Kitchen and dining hall block of sufficient facilities. The students can be accommodated in the first two floors and the top floor can be set apart for accommodating teachers and staff.

#### 8. Conversion of SIE to SCERT:

The State Institute of Education (SIE) is expected to be an apex body in co-ordinating the District Institutes of Education and Training. The present SIE is not in a position to cater the above needs as envisaged. Strengthening of SIE is necessitated and hence the conversion of SIE to State Council for Educational Research and Training (SCERT).

The following additional facilities are proposed

- a) Conference hall - 1 No.
- b) Education Technology - 1 No.
- c) Lecture halls - 4 Nos.
- d) Research and statistics - 1 No.
- e) Reception, toilets etc.
- f) In addition there should also be a hostel building to accommodate 50 students.

#### 9. Primary Education Development Society of Kerala (PEDSK)

This project is proposed to be managed by the PEDSK for which an office building-cum-management

information system unit will be constructed with the following facilities.

- a) Director Room - 1 No.
- b) Project Director's rooms - 4 Nos.
- c) MIS computer room - 1 No.
- d) Conference room - 1 No.
- e) Lecture Hall - 1 No.
- f) Office space
- g) Reception, Toilets etc.

#### 10. Central Text Book Depot at Thiruvananthapuram

A building of about 800M<sup>2</sup> plinth area is proposed to be constructed in a single storey to accommodate the central Text Book Depot at Thiruvananthapuram. This will house ample storage space, a store keepers room, office room and toilet facilities. The building will have a central main entry and provided with wooden flooring and anti termite treatment to flooring, foundation etc.

### III. GUIDE LINES ON SELECTION OF SITE

1. Drainage: The chosen site should be drainable, ideally the site should gently slope towards a good water course but whatever the condition of the site, it should not be subject to floodings, on the contrary it should be 1 m. above the highest flood level to ensure continuous functioning of any future sanitation system.



2. Configuration: The site should as far as possible approximate to a rectangular shape and if possible plane in section with no local irregularities ie. mounts or hollows.

3. Access: There should, as far as possible, be road access, to the site. It is suggested that a good site from this point of view would be near a road but not a busy arterial highway which could constitute a danger to the Children.

4. Services: Avoid sites which are crossed by H.T. electricity lines or other main services like sewerage and water supply. Ofcourse the proximity of services is important bearing in mind that in future the schools will need electricity and water supply. The site should anyway be within reasonable reach of water, because the construction work depends on the use of water.

5. Danger and disturbances: The site should not include, or be within easy reach of nalla, river, ponds or the like which would present a danger to young children. Preferably it should not be near a place where there is likely to be public gathering with its threat of disturbance ie, a cinema, factories, liquor shops, burial ground etc.

6. Future development: This building should be considered as the start of a school which can in future develop to a High School. As far as possible, the possible final development can take place in an organised and orderly way.

7. Earthquakes and General Environment: It should be remembered that steep or otherwise awkward sites can require excessive and costly earthmoving both at the foundation stage and when roads and paths are being set out especially to provide a level playing field. The ideal to aim for is neither excessive cut nor fill.

#### IV. GUIDE LINES ON PREPARATION OF SITE PLAN AND LAY OUT PLAN

##### a) Site Plan

1. Plan: An accurate plan is required to a scale of not less than 1:100 and this must show all site boundaries with overall dimension, existing walls, existing buildings, existing water source such as well, water tap, Borewell etc. hedges, streams and all natural phenomena.

2. Contours: An indication is needed (either on the plan or by sections) of the general topography, Net levels will give an idea of the direction of slope, any local depressions, banks etc. together with the relative levels of adjacent roads and surrounding areas and floor levels of existing buildings.

3. Orientation: The direction of the prevailing winds and the North point must be indicated.

4. Communication: The position of the nearest main road and access from the road to the site should be shown together with the approximate distance from and the name of the nearest Bazaar. The width of any adjacent road and any road widening proposals should be shown.

5. Trees: The position of existing major trees (and types if known) should be shown.

6. Services: Any H.T. Line, pylons or water main either crossing or near the site should be shown on the plan.

7. Restrictions or Development: Any factors which may restrict or influence the further development of the site as a school should be mentioned.

8. Water Supply: Any indication of the ground water level or other future source of supply should be indicated.

9. Drainage: The position and direction of flow of streams should be shown together with an indication of the highest and lowest water level at the site. If any land near the site is subject to flooding, the flood line should be shown with the highest known flood level.

10. Soil Particulars: Trial pits should be dug at site to get an indication of the soil strata in order to ascertain the nature and type of foundation etc.

**b) Layout Plan**

1. The location of a new proposed building should as far as possible be at a corner of the available land with due regard to the offset clearances required from the building line or the road etc. Any other way of placement will inhibit future expansion.
2. Wherever an existing building is available at site proposed new building should as far as possible be placed and aligned in such a way that the front line of the building both old and new is one and the same.
3. It may happen that an existing building is oriented not in a scientific way so as to utilise maximum natural lighting and ventilation at the utility time of the building. This factor should not prohibit the placement of a new building to a different orientation to satisfy the above deficiencies. However the consideration raised in para 2 above should not be overlooked.
4. The site conditions may not allow compliance in certain cases with para 2 above. Even in such cases the new proposal should be so laid out as to have the verandah visible from the existing building entrance.
5. The proposed building should not be located near the immediate vicinity of power lines, big trees, natural stream flow, water logged area etc. The necessity for future widening of an adjoining road and such other relevant factors should also be borne in mind while finalising the lay out plans.

6. In case of providing add on facilities such as a store building or a toilet block etc. care should be taken to so locate such facilities that future construction of additional accommodation for the school will not be hindered in anyway. The utility of the add on facility should also be given due regard in its location. Eg. A store building should be easily accessible to a vehicle or at least the head load distance should be minimum. A new toilet should be so located as to have easy drainage and avoid air pollution of habitated area through the prevailing wind.

#### V. GENERAL INSTRUCTIONS

Most of the pertinent points and related instructions have already been elucidated in the connected sub headings and para. A few more general points are to be high lighted here. Execution of work within the specified time of completion should be regarded as a key factor. All the component works like sanitary and water supply arrangements, electrification, etc. should be simultaneously arranged through a single or different agencies as found convenient. This will ensure avoidance of delay in the ultimate commissioning of a project just because certain component works get delayed either in arrangements or in execution. The procurement of materials such as steel, cement etc. should not be the responsibility of the Government. The Contractor should be liable to the timely procurement of materials and labour. He should also produce necessary test certificates from the approved authorities on demand by the PWD regarding the

quality standard of any material supplied by him. ACRO spans and steel props and steel shuttering should invariably be used for RCC form work and should form a part of the Contract agreement. The shuttering for roof slab should be erected only after consolidating the basement fill and laying and curing of flooring concrete. The use of subsidiary supporting blocks of any material to increase the reach of steel props of ACRO spans should be strictly prohibited. Though the form work materials can be painted with one or other anticorrosive agents, as a matter of routine maintenance, it should not in any way be superfluous so as to end up with a similar coating in the re-inforcement bars when laid out on the shuttering. In concluding the general instructions it is emphasised that the economy in construction commensurate with safety standards should be the guideline and the placement of doors and windows should be functionally compatible.

#### **VI. METHOD OF EXECUTION**

Separate detailed estimates will be prepared for individual work considering one school as a unit. The rate will be based on the current schedule and data adopted in the Kerala P.W.D. The works will be executed through registered contractors on open tender. However, the tendering authority should be vested with powers for denying issue of tender schedule to any or other particular contractor on reasons to be recorded in their application with a

view to facilitating smooth and speedy implementation of the project by eliminating contractors who habitually and purposefully resort to delay tactics. Time of completion will be laid down as a factor of paramount importance and essence for the contract and penalties should be specified for delay as also rewards for earlier completion. A particular work should be treated as an entity comprising of all the components like structural, sanitary and water supply arrangements, electrification etc. including site development and should be systematically completed. This approach will enable avoidance of delay in commissioning the project. As far as possible the time of completion should be so specified as to permit the opening of the school in the appropriate general pattern in conformity with the calendar followed in the State. The state should not undertake supply through a government stores organization or otherwise if any material and or machinery required for the execution of the work. The procurement of the men, material and machinery and their deployment should be the sole responsibility of the contractor. The responsibility of the P.W.D. should rest with the enforcement of rigorous quality standards and supervision of technical detailing.

#### **VII. BRIEF SPECIFICATION**

##### **a) Foundation:**

Out of the three selected districts of Malappuram, Kasaragode and Wayanad the geological formations and subsurface soil conditions of the

first two districts are mostly identical. In case of Wayanad district the geology, topography and soil strata are totally different and often requires special treatment for foundations. In the case of first two districts typical spread footings with random rubble masonry in cement mortar 1:6 over a layer of cement concrete 1:4:8 of 30cm thickness is to be adopted. In the case of Wayanad district as also in isolated cases of the other two districts a more elaborate treatment of the foundation will be required. As a guideline it can be specified that depending upon the results of subsurface soil investigation the provision of a sand bed and or sand piles consolidated by submergence in water can be adopted with a wider spread width of foundation and suitable depths. If the nature of the terrain so dictates the foundation should be stepped into different levels and so maintained even at the basement and superstructure and roof levels for a suitable number of class rooms in a cluster.

b) Basement:

The basement of the buildings should also be constructed with random rubble masonry in cement mortar 1:6 with a minimum width of 60cm and height of 60cm. Wherever the topography of the adjoining land so warrants a suitably enhanced width and height of basement should be provided. A plinth level belt with reinforced cement concrete of 1:2:4 proportion



with cage reinforcement should be provided to a minimum thickness of 20 cm to avoid local concentration of loads on foundations.

c) Superstructure: Superstructure is proposed to be constructed with random rubble masonry walls in cement mortar 1:6 to a height of 3.05 Metres and thickness of 45cm. The typical room size will be 5.1 M. wide x 7.2 M. deep with a floor area of 36.72 M<sup>2</sup> and sufficient natural ventilation and lighting. An R.C.C. 1:2:4 belt with cage reinforcement will be provided at lintel level to cover the entire superstructure walls, sunshades and sun brakers of 60 cm. projection will also be provided for windows and ventilators wherever necessary. Wherever the building construction of more than 3 class room length a suitable expansion joint has to be provided. There will also be a built in R.C.C. cup-board and a black board suitably laid out on walls of each class rooms.

d) Roofing: The roofing will be or reinforced cement concrete 1:2:4 with suitable reinforcement using CTD bars. Two Nos. of beams of suitable design will be given in the longitudinal direction of the building so that a class room roof will be in three panels resting on load hearby walls and equally divided by these two beams. R.C.C. bed blocks to design should be provided it the bearing of these beams. With this arrangement a nominal thickness of 10 cm. with one way re-inforcement is sufficient for the roof slab. An R.C.C. of 1:2:4 mix cannot had imperiors to cop of the intensity of monsoon pours in the selected districts. Kerala receives annual rain

only second to Assam in India. Hence an impervious layer of cement concrete of 1:1½:3 proportion with thermal reinforcement and to an average thickness of 5 cm. will be provided over the roof slab to make the structure leak proof. Suitable commercially available leak proof compounds will be added while preparing the mix for the impervious layer. A minimum of 30 cm. projection over the superstructure walls will be provided to the roof. No parapets should be given to the roof slabs or sunshades so as to facilitate wider and easy dispersion of the storm water from the roof and sunshades.

e) Doors and Windows: Timber has become a scarce commodity. The Government of India have also banned use of timber in buildings with a view to enforcing environmental protection in the forest sector. Hence steel doors and windows are proposed to used in these constructions. The window shutters will have frosted glass panes.

f) Finishes: External faces of superstructure walls and basement will be left unplastered for the sake of economy. However a pointing to the exposed faces with a richer cement mortar of 1:4 proportion will be provided to prevent deterioration of joint bonding in masonry. Inside of the walls will be plastered over with a coat of cement mortar 1:4, 15 mm thick. The flooring will with cement concrete of proportion 1:4:8 for a thickness of 10 cm and a wearing coat of 1:3:6

cement concrete 20 mm thick with 12 mm graded metal to a granolithic finish will be given. The underside of roof slab is not proposed to be given any conventional finish with a view to economy. Instead steel shuttering and form work will be insisted for the roof slab so as to avoid the necessity for any additional finishing touch. However a coat cement wash of the desired colour can be given. The four edges of this slab will any way have to be finished for a width of 15 cm. with a coat of cement plaster of 1:3 proportion 9 mm thick. Inside walls will be white washed and steel doors and windows painted with two coats of synthetic enamel paint over a priming coat. The exposed faces of walls and basement will be given a coat of cement wash.

**Future Expansion:** Construction of new building with 5 class rooms will include a staircase room with a roof of semi permanent nature at a minimum height of 2.4 M above the general roof level. A minimum of 1.2 M clear width of flight should be provided for the stair with due allowance for ballusters and open newel. The rise and tread of the steps will be 15 cm and 30 cm respectively. The door of the staircase accessing the roof should open outwards and the frame should invariably (over slab level) have a sill piece over an R.C.C. kerb of 15 cm height. Sufficient sunshade projections should also be provided over the door.

General: There are certain general points which are important. The strength of cement deteriorates when stored for 3 months. Water cement ratio is another factor often overlooked by workmen, but, is of tremendous influence on the ultimate strength of cement related works. Water used in preparation of mortar for concrete has to be of potable quality. For important components like slab, beam etc. of the structure, only fresh O.P.C. used. P.P.C. should be avoided as far as possible, granite metal used for all R.C.C. works should be machine crushed and should conform to the grading. Sand used for all works should be clean wash river and saline sand should not be used for filling any portion of building proper.

#### **VIII DETAILED SPECIFICATIONS**

All the constructions will conform to the minutest details to K.D.S.S. as applicable in Kerala P.W.D.

#### **IX WORKMAN SHIP**

The works are proposed to be executed through registered contractors who are having a number of skilled workers in various disciplines on their muster. The supervisory staff of PWD basically responsible for the execution of the work have to take care that inexperienced or unskilled workers do not stumble on to the field and provide an inferior or sometimes dangerous finish to the work. For example, a sand bed when provided in a

foundation should attain a consolidation by flooding. A poor workmanship in this area would entail in partial wetting of the sand and pouring of foundation concrete over such a bulked sand layer. In pouring of the concrete if a pan load a mix is dumped from the chest height on to the shuttering there will be segregation of ingredients. Hence care shall be taken to pour the pan load of concrete at a lower height in order to avoid segregation. The compaction of bed concrete should be done in a routine manner and the maximum thickness of an individual layer should be restricted to 15 cm. It should be insisted that adequate curing is given to all works using cement. This is an aspect often neglected. For example an R.C.C. slab will be cast under close quality control and supervision, but the curing may not be started at the appropriate time or may be ended without prolonging to the period to the necessary extent. The finished surface should have a smooth appearance and feel to the necessary lines and levels. No unduly sharp corners should be left at the edges of the door and windows or other openings in the plastering.

#### **X Notes on Masonry**

Random rubble masonry in cement mortar is proposed to be used for the work. The rubble should be of good quality and required strength surface rocks should be avoided. Weak corners of individual stones should be levelled or and the facing hamer dressed before use on

work. The stones considerably hotter and prevailing atmospheric temperature by exposure to direct sunlight in heaps should be thoroughly wetted before used on work. The stone should as far as possible be fully embedded in mortar and joints should be closed tight by hammering in suitable sizes of rubble chips. Bond stones should be used at regular intervals placed in a staggered distribution dumping of stones on to the completed portion of masonry like in the course of constructing foundation should be strictly discouraged. In unavoidable cases initially a few stones should be carefully packed to a wider base in to which further stones can be dumped with due care. In construction of walls and other than section members care should be taken that stones from both faces are systematically placed in such a way that they get interlocked on completion of the masonry. The mortar joints in masonry should not be flushed upto the face, but should be neatly lined along the periphery of the facing stones after removing the excess mortar. Suitable holes in basement masonry should be left during construction at the appropriate places to permit of laying outlet pipes of closet pans, shallow openings at top of natural walls should be provided in short lengths in alignment with windows lines etc. should be provided to permit escape of hot air from within the rooms. Care should also be taken to place sufficient number of stones in lean mortar at appropriate places for easy removal in future and filling with concrete for fixing hold fasts of doors and windows. Stones so placed should be demarcated for easy identification. A 10 cm. thick R.C.C. belt with single

layer nominal reinforcement in the middle of the thickness should be provided in top of superstructure masonry. The top of this belt should be trowelled smooth. The masonry should be properly cured by profuse application of water at sufficient intervals for the required number of days. Special arrangements should be done in holidays to ensure continuity of curing. This should be enforced by surprise inspections by responsible officers.

#### XI. NOTES ON PLASTERING AND POINTING

Inside faces of the walls shall be plastered over with cement mortar 1:4, 15mm thick to a smooth finish avoiding sharp edges and corners. The joints in masonry should be roughly secularised and the face thoroughly hutted before the application of the plaster. Exposed faces of the masonry is proposed to be pointed with cement mortar 1:4 and neatly stick lined. Preparation of the surface for pointing also should be done in a similar way as for plastering. Plastering and pointing should also be properly cured.

#### XII. SPECIFICATIONS FOR SOME IMPORTANT GENERAL ITEMS

On top of the finished and trowelled smooth R.C.C. belt of roof level, two layers of craft paper cut to the width of the wall should be laid in position before pouring concreting. The reinforcement bars should be supported with cover made of cement mortar 1:2 and fully

cured by immersion in a drum of water or storage tanks. The size of the cover blocks should be 3cm x 3cm to the thickness of required cover. A double strand of building wire should be inserted in the block at the time of casting it with a view to facilitating tying the cover block in position to the reinforcement bars. Cover blocks should not only be used to support the bottom of slab and beams reinforcements but the sides of the cage of bars in the beam also.

CTD re-inforcement bars of tested quality should be used in the work in conformity to the relevant class of Indian standard specification. The placement should be so detailed as to made available the required extent of steel area as dictated by various designs parameters. Care should be taken to ensure that provision of sufficient bars and supports is available at the appropriate level. Cranking points should be carefully decided after due consideration of supports and or edge conditions regarding continuity etc. curtailment and/or cranking of bottom rods in beams reinforcement should be avoided and sufficient negative re-inforcement should be added at supports. At ends of beams top and bottom rods should be bent to a L shape of sufficient arm length so that proper bending will develop.

Wherever slab re-inforcement is cranked up over supports sufficient number of chairs made of re-inforcement rods should be provided at suitable intervals to support the cranked up as



well as the extra rods and their distributors. This should be done in a way to ensure the top cover also.

Pouring of concrete in the slab should be proceeded by concreting the beam to the top level of the rib. Slab concreting should proceed in strips of about a metre width and thickness controlled by placing thickness bench of about 1.5 M length along the edge. The thickness control bench should consist of a reeper of 10 cm x 1.5 cm supported on three independent wooden vertical blocks of the required size. The size of the block the thickness of the reeper should together measure the thickness of the concrete. In our particular case, a 10 cm slab will be required with allowance for future vertical expansion. Hence the size of support blocks of the bench should be a 8.5 cm cube which together with the 1.5 cm reeper on top of it makes up a constant thickness of 10 cm for the slab. The advantages of making the support legs in independent cubed blocks in their flexibility to be placed without meddling with the reinforcement layout. Suitable walkways with short wooden plat-forms laid in line to enable workman carrying concrete to walk over them without disturbing the reinforcement bars should be provided. The pupil pouring the concrete and also those consolidating the poured concreting by packing with steel rods should also be positioned on such plat forms. These precautions are essential to ensure that the reinforcement rods are not subjected to any movement which is bound to be transmitted to newly placed green concrete. Concrete poured in the beam should preferably be consolidated using a mechanical vibrator with a needle not exceeding

30mm dia. Utmost care should be taken in the consolidation of concrete in the beam to ensure that concrete of the specified ratio fill up the cover area and all corners and sides of the beams section.

#### **XIII NAME BOARD OF THE SCHOOL:**

There is already an accepted pattern of providing name boards to schools in the state with regard to information on classification of school, place, sub district and district names. This can be standardised to a specified size with the inclusion of an unscripture that the project is World Bank aided. The board can be made out as a separate piece and installed on or near the building. The back ground should be painted yellow and the letters in black. The inscription regarding World Bank aid can be of a different colour say red.

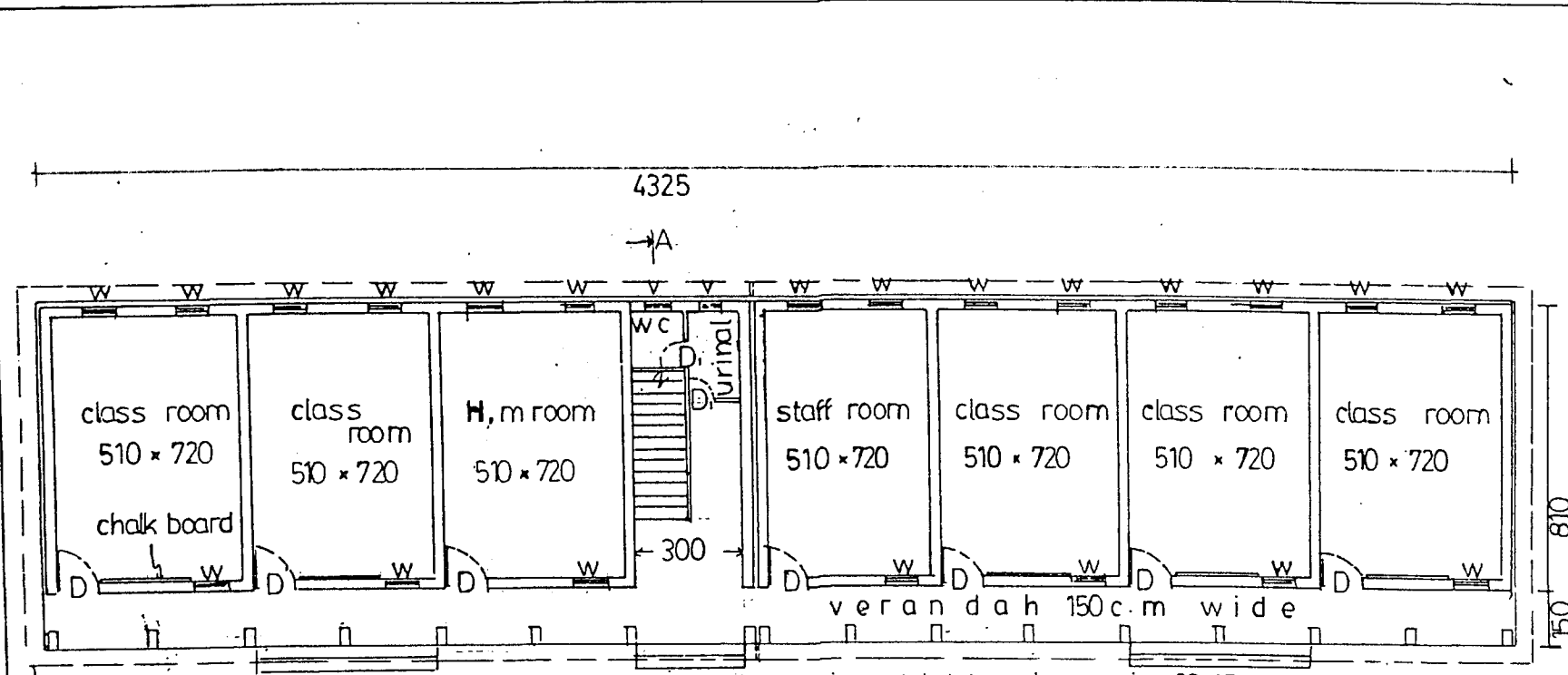
#### **XIV DETAILED DRAWINGS:**

Detailed drawings of the following are appended:

1. Five class room new building (6 sheets)
2. Two class room new building - Typical  
for additional class room construction (3 sheets)
3. Gurukulam school building (3 sheets)
4. Gurukulam Hostel building (4 sheets)
5. Urinal cum lavatory (3 sheets)
6. Type design for steel door/window (2 sheets)

7. Compound wall (one sheet)
8. Separation wall of classes (one sheet)
9. Conversion of SIE to SCERT (one sheet)
10. PEDSK - Office cum management information system (one sheet)
11. Central text book Depot at Trivandrum (one sheet)

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wire cut brick column size 23x45

P L A N

schedule of doors and windows	
D	Door 110x210 steel single shutter
D <sub>1</sub>	" 80x190 single shutter (toilet door)
W	Window 120x140 steel double shutter.
V	Ventilator 100x60 glass louvers

scale 1:150

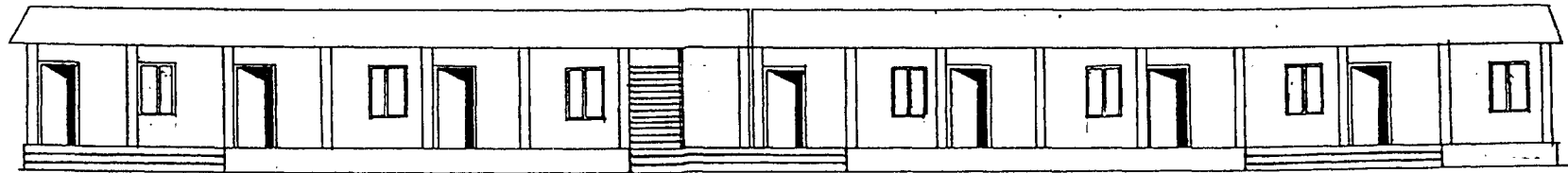
DISTRICT PRIMARY EDUCATION PROJECT

KERALA STATE

TYPE DESIGN FOR 5 CLASS ROOM SCHOOL BUILDING

PLAN

Drg no. D P E P/1/A/1

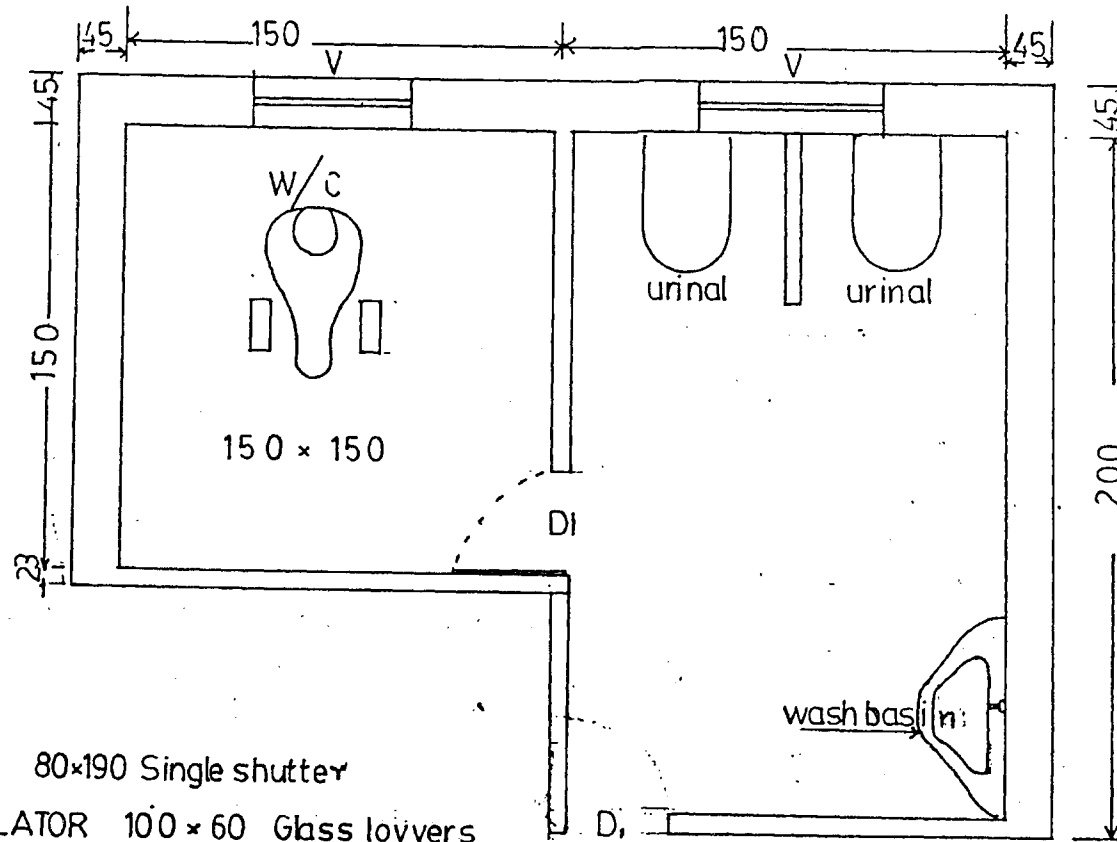


F R O N T E L E V A T I O N

scale 1:150

DISTRICT PRIMARY EDUCATION PROJECT  
KERALA STATE

TYPE DESIGN FOR 5 CLASS ROOM SCHOOL BUILDING  
ELEVATION Drg no. D P E P / 1 / B / 1



\* DETAILS OF URINAL/LATRINE BENEATH THE STAIR CASE

not in scale

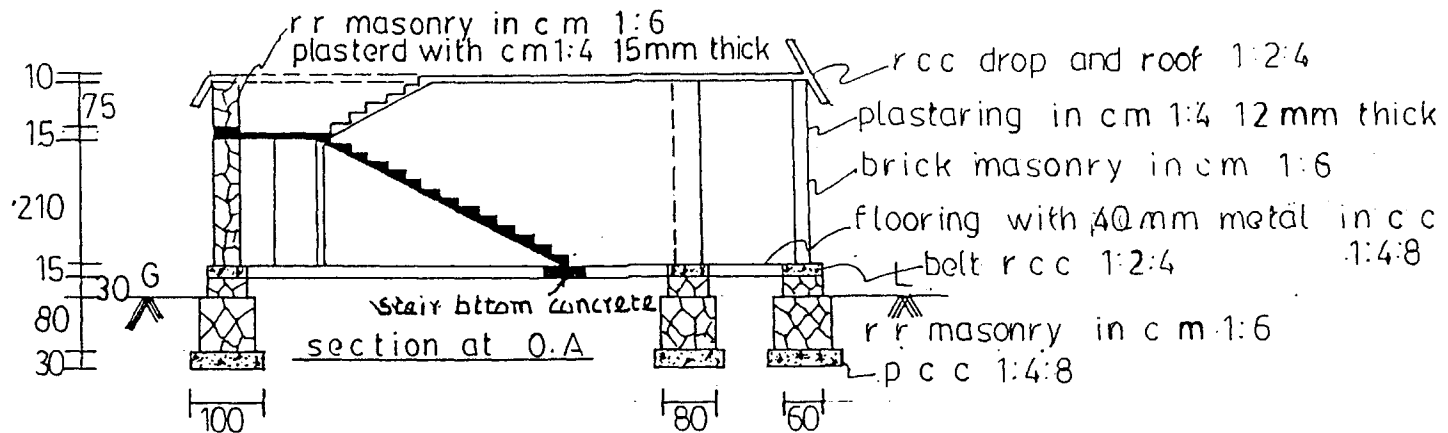
DETAILS

- DI DOOR 80x190 Single shutter
- V VENTILATOR 100 x 60 Glass louvers

DISTRICT PRIMARY EDUCATION PROJECT  
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TYPE DESIGN FOR 5 CLASS ROOM SCHOOL BUILDING \*

TOILET PLAN | Drg no. D P E P/1/D/1



scale 1:100

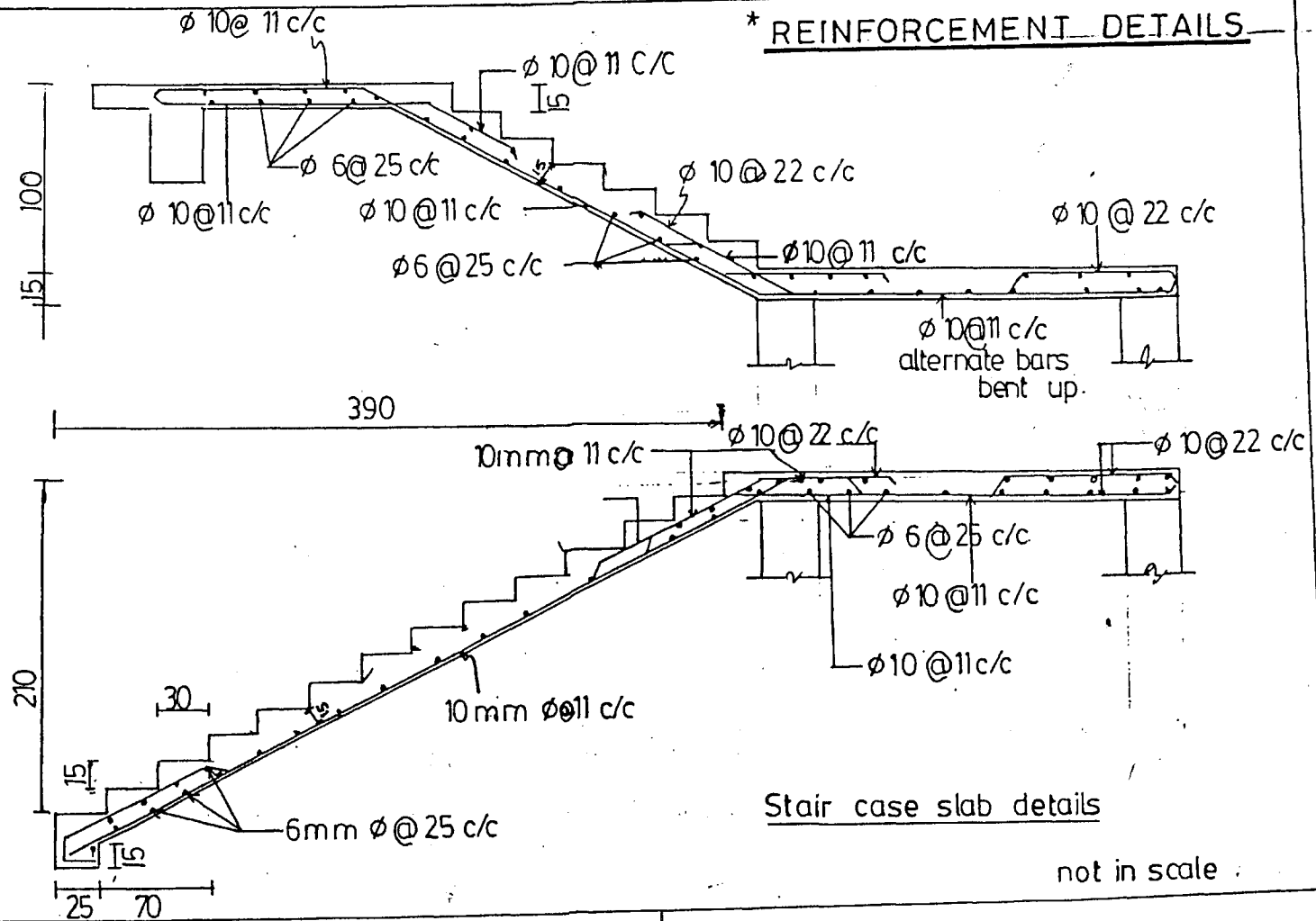
all dimensions are in c.m.s

DISTRICT PRIMARY EDUCATION PROJECT  
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TYPE DESIGN FOR 5 CLASS ROOM SCHOOL BUILDING

CROSS SECTION | Dtg no. DPE P/1/C/1

**\* REINFORCEMENT DETAILS**



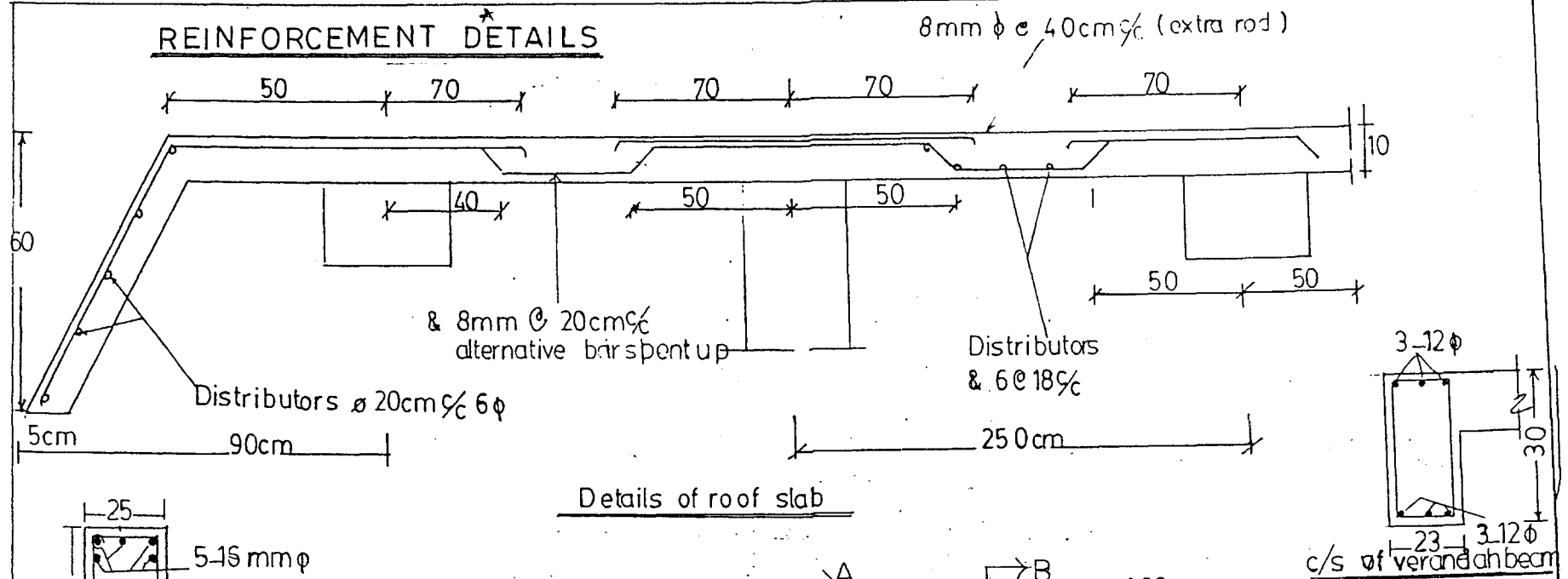
DISTRICT PRIMARY EDUCATION PROJECT  
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TYPE DESIGN FOR 5 CLASS ROOM SCHOOL BUILDING\*

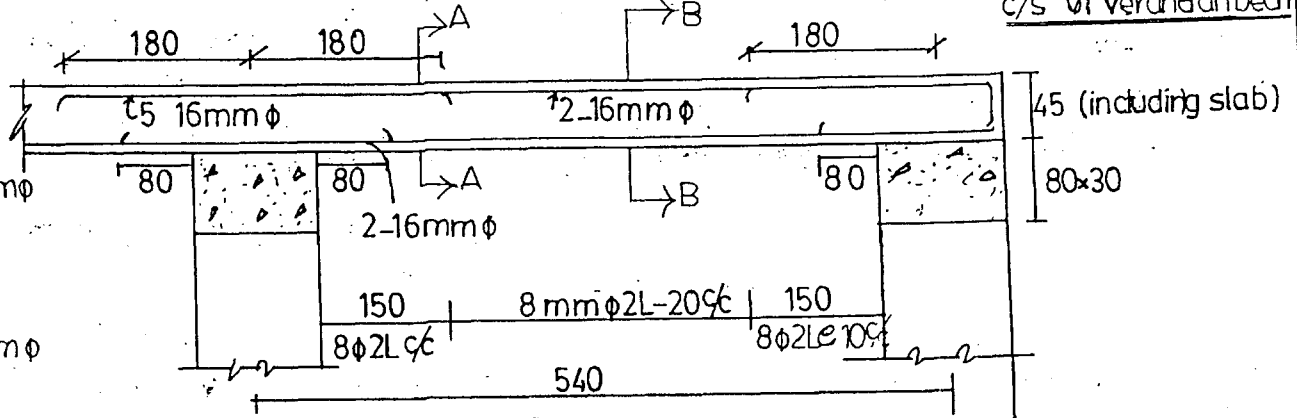
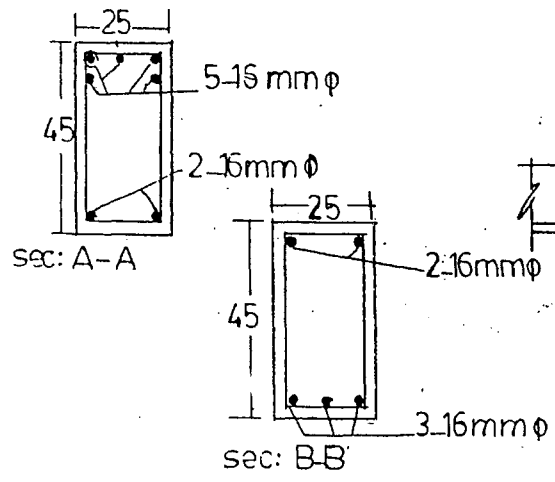
STRUCTURAL DETAILS I | DRG. No. DPEP/I/F/1



**REINFORCEMENT DETAILS**



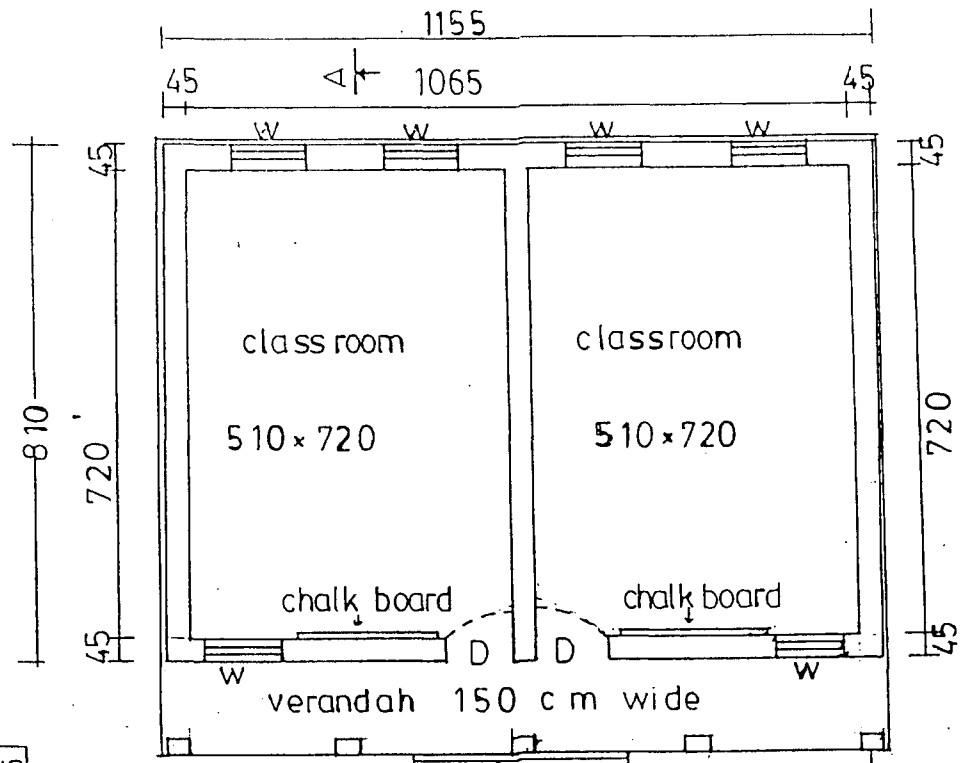
**Details of roof slab**



DISTRICT PRIMARY EDUCATION PROJECT  
KERALA STATE

TYPE DESIGN FOR 5 GLASS ROOMS SCHOOL BUILDING \*

STRUCTURAL PLAN | Drg no. D P E P/1/E/I



shedule of door & windows

- D-door 110 x 210 steel single shutter
- W-window 120 x 140 steel double shutter

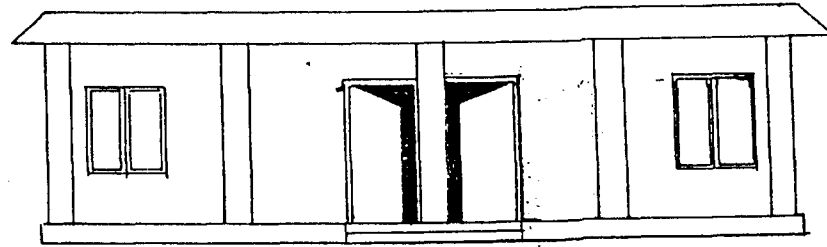


wire cut brick column size 45x23  
scale 1:100

**DISTRICT PRIMARY EDUCATION PROJECT KERALA**

**TYPE DESIGN FOR 2 CLASS ROOM SCHOOL BUILDING  
TYPICAL FOR ADDITIONAL CLASS ROOM CONSTRUCTION**

**PLAN | Drg no D P E P/2/A/D**

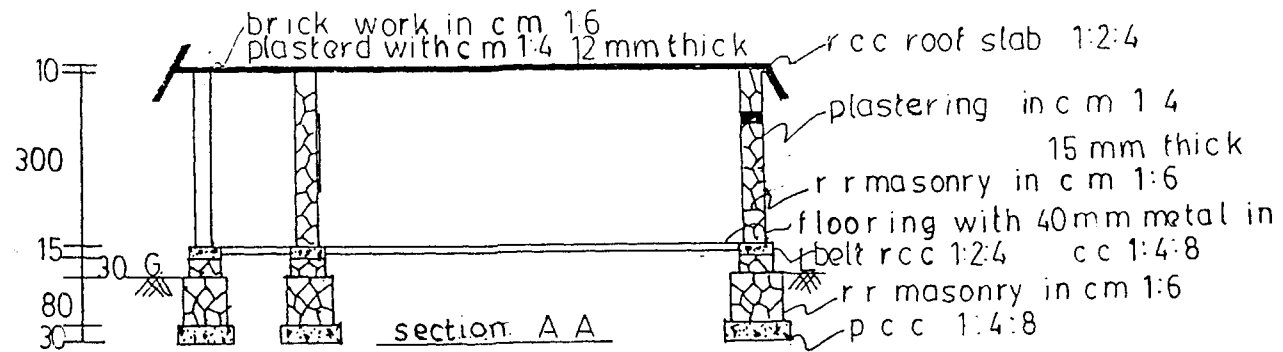


F R O N T E L E V A T I O N

DISTRICT PRIMARY EDUCATION PROJECT KERALA

TYPE DESIGN FOR 2 CLASS ROOM SCHOOL BUILDING  
TYPICAL FOR ADDITIONAL CLASS ROOM CONSTRUCTION

ELEVATION      Drg no D P E P / 2 / B / D



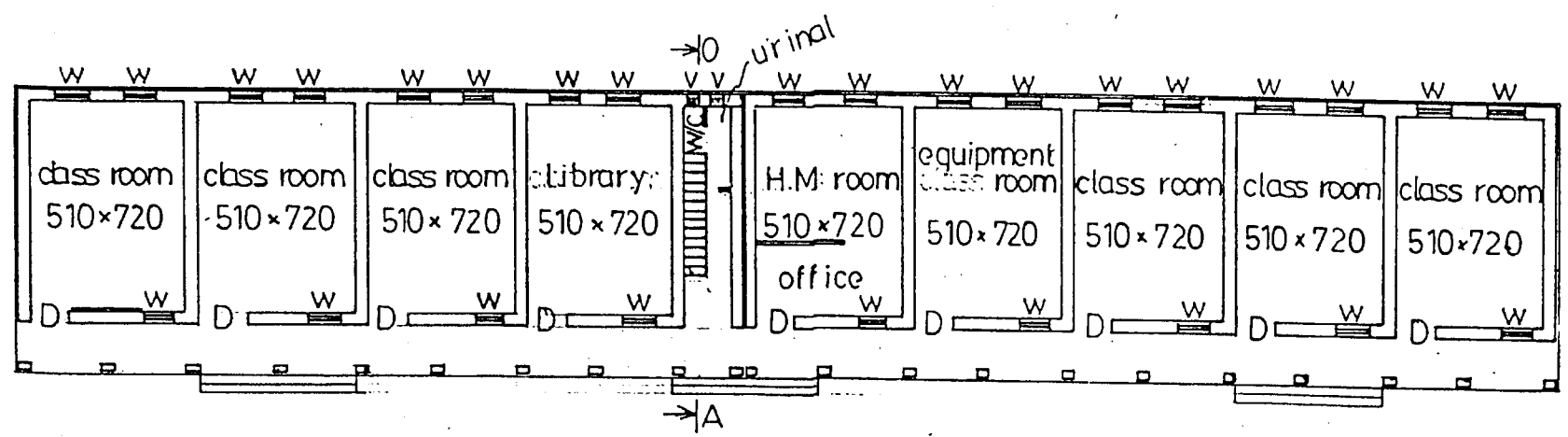
CROSS SECTION

scale 1:100

DISTRICT PRIMARY EDUCATION PROJECT KERALA

TYPE DESIGN FOR 2 CLASS ROOM SCHOOL BUILDING  
TYPICAL FOR ADDITIONAL CLASS ROOM CONSTRUCTION

CROSS SECTION | Drg no. D P E P/2/c/d



P L A N

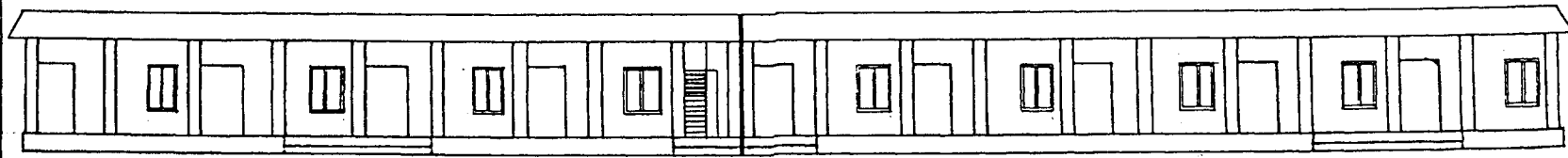
scale 1:200

all dimensions are in c m s

DISTRICT PRIMARY EDUCATION PROJECT  
KERALA STATE

TYPE DESIGN FOR GURUKULAM SCHOOL BUILDING.

PLAN | Dry no. D P E P/7/A/L



F R O N T   E L E V A T I O N

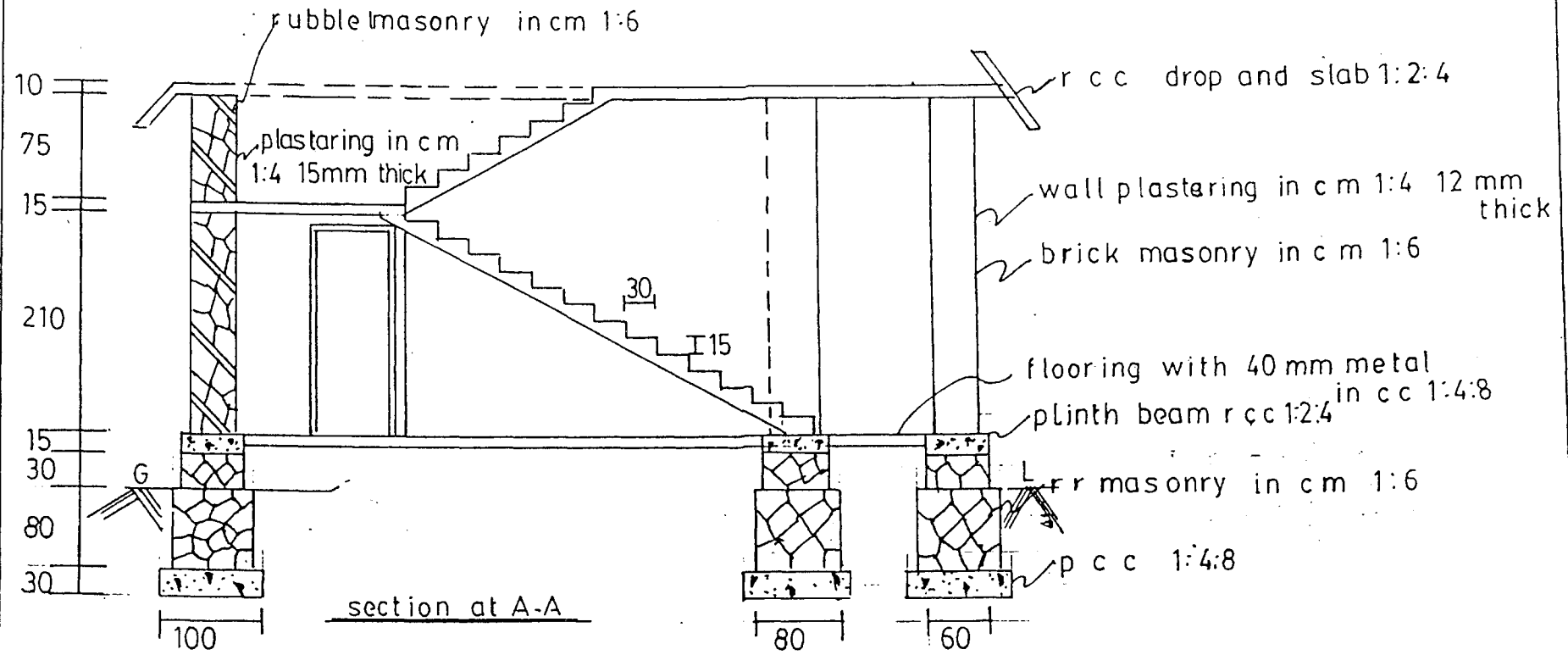
scale 1:200

all dimensions are in c m s

DISTRICT PRIMARY EDUCATION PROJECT  
KERALA STATE

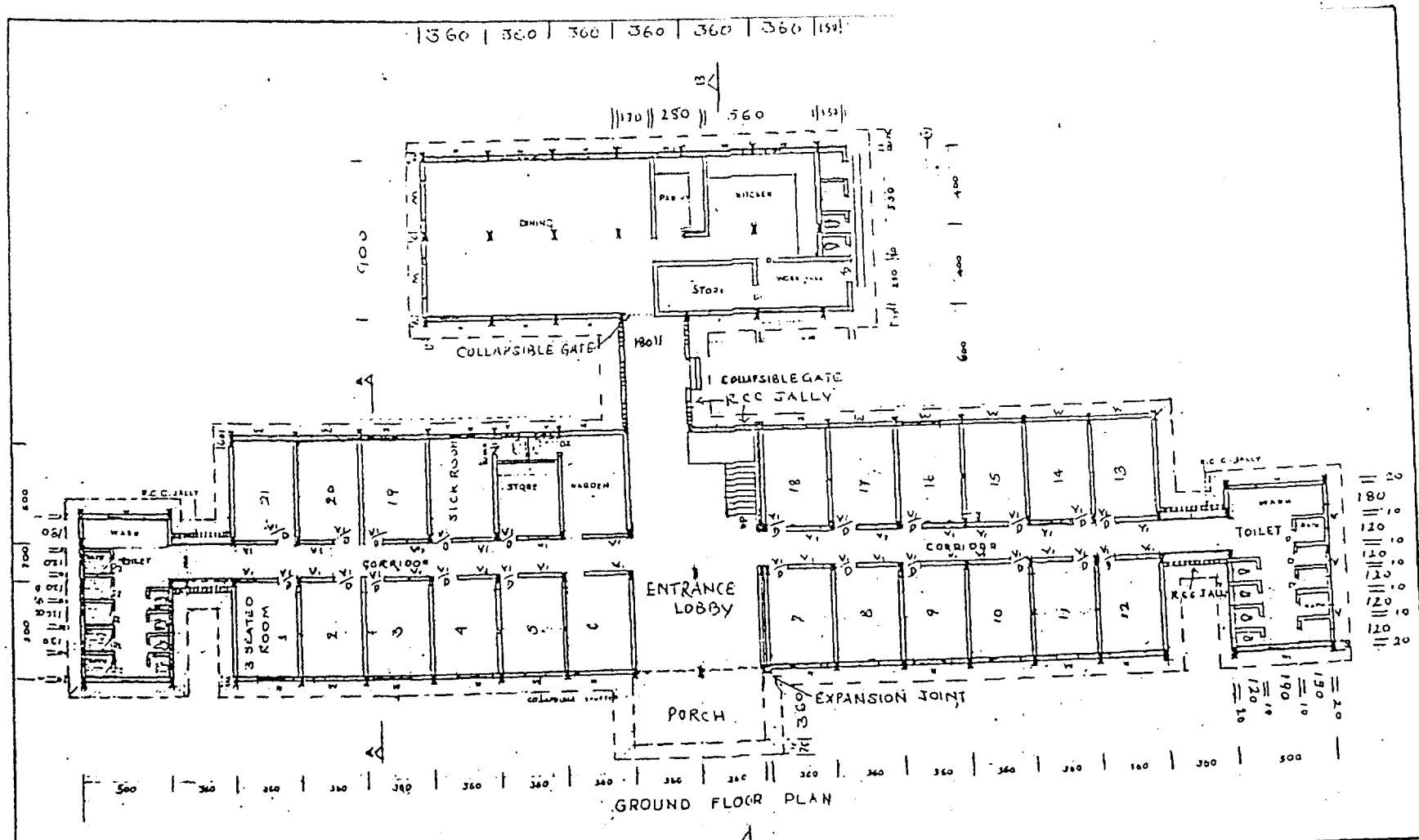
TYPE DESIGN FOR GURUKULAM SCHOOL BUILDING

ELEVATION | Drg no. D P E P / 7 / B / L



scale 1:50

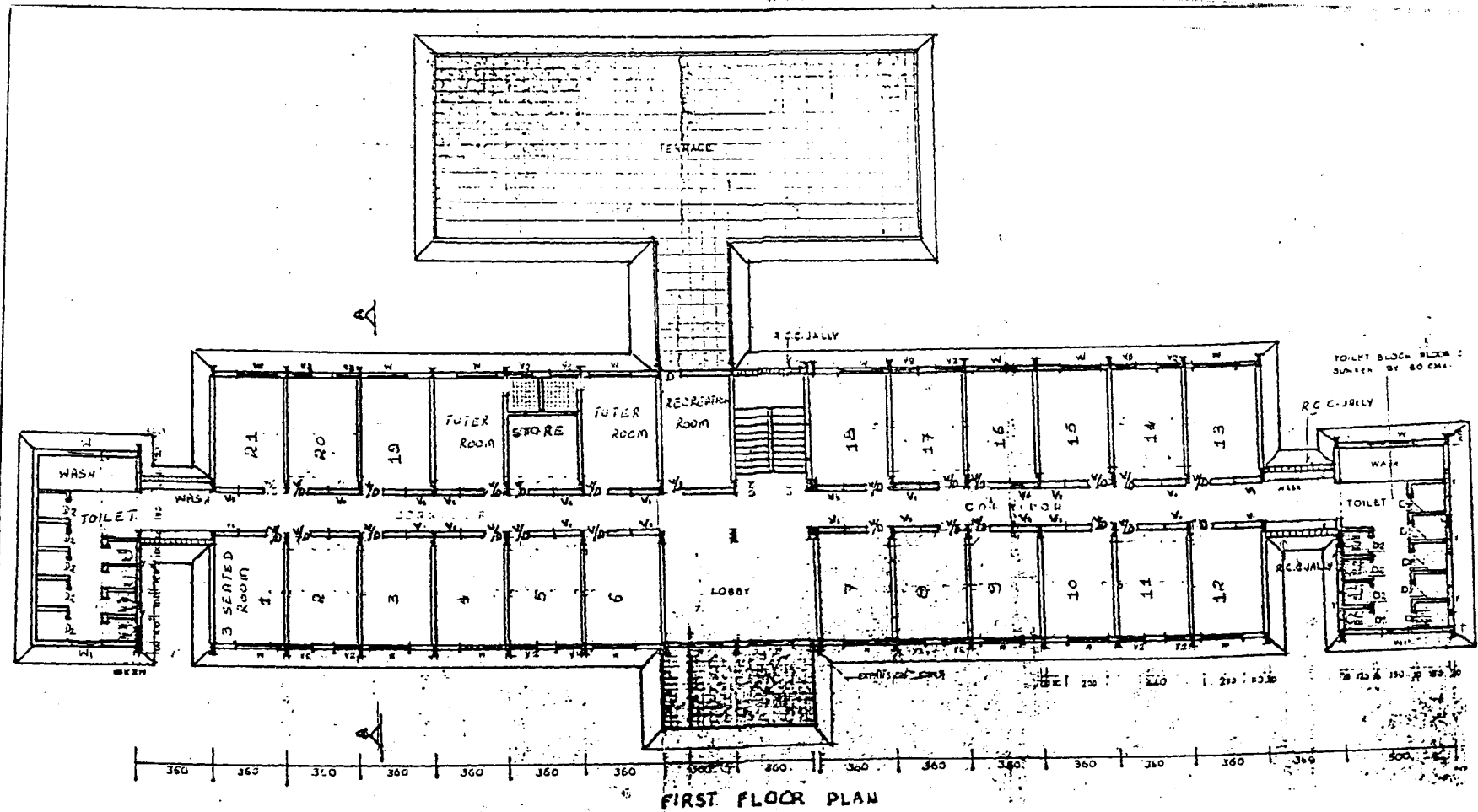
DISTRICT PRIMARY EDUCATION PROJECT	
KERALA STATE	
GURUKULAM	
TYPE DESIGN FOR <del>XXXXXX</del> <del>XXXXXX</del> SCHOOL BUILDING	
CROSS SECTION	Drg no. D P E P/7/C/6



GROUND FLOOR PLAN

DISTRICT PRIMARY EDUCATION PROJECT.	
KERALA STATE	
TYPE DESIGN FOR GURUKULAM HOSTEL BUILDING	
GR. FLR. PLAN	DRG No. DPEP/7/ I/L

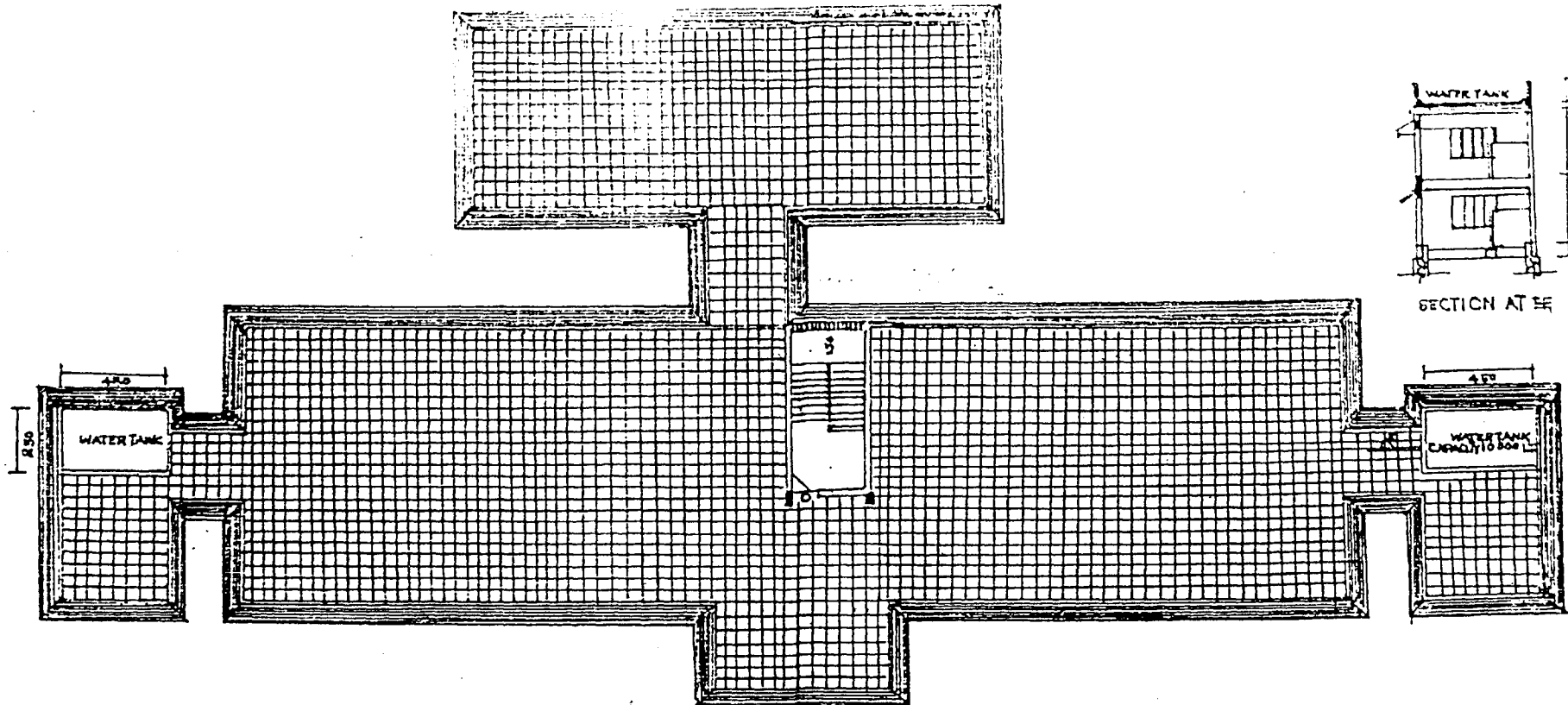




DISTRICT PRIMARY EDUCATION PROJECT  
KERALA STATE

TYPE DESIGN FOR GURUKULAM HOSTEL BUILDING.

FIRST FLOOR PLAN | DRG No. DPEP/7/J/L



DISTRICT PRIMARY EDUCATION PROJECT.  
KERALA STATE

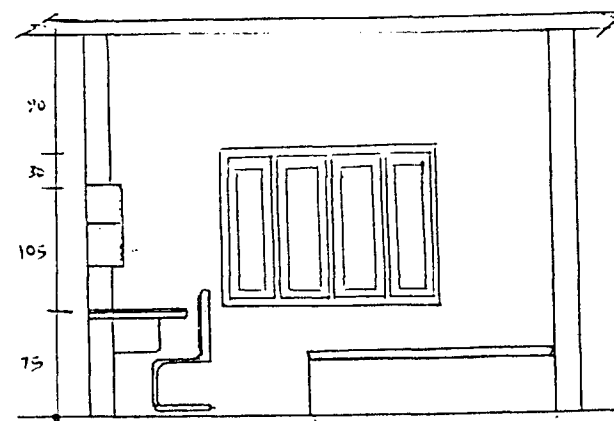
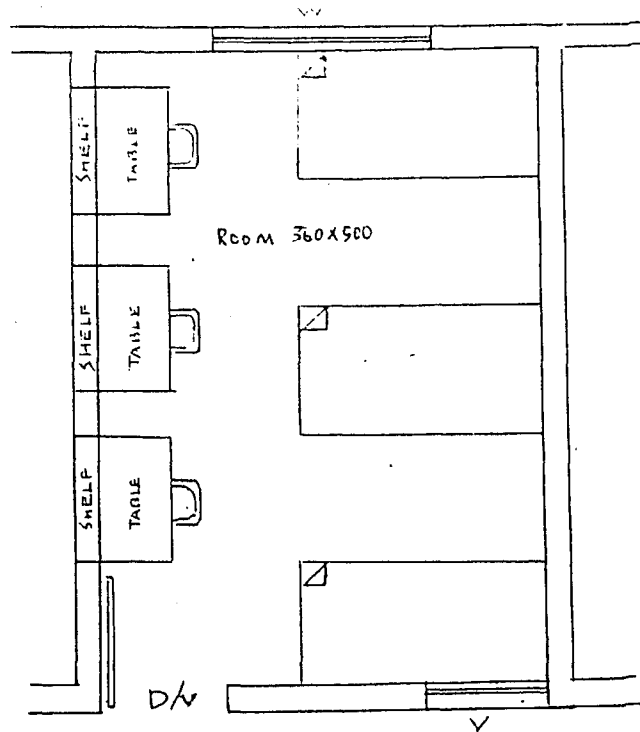
TYPE DESIGN FOR GURUKULAM HOSTEL BUILDING.

ROOF PLAN

Drg no. D P E P / 7 / K / L

TERRACE PLAN





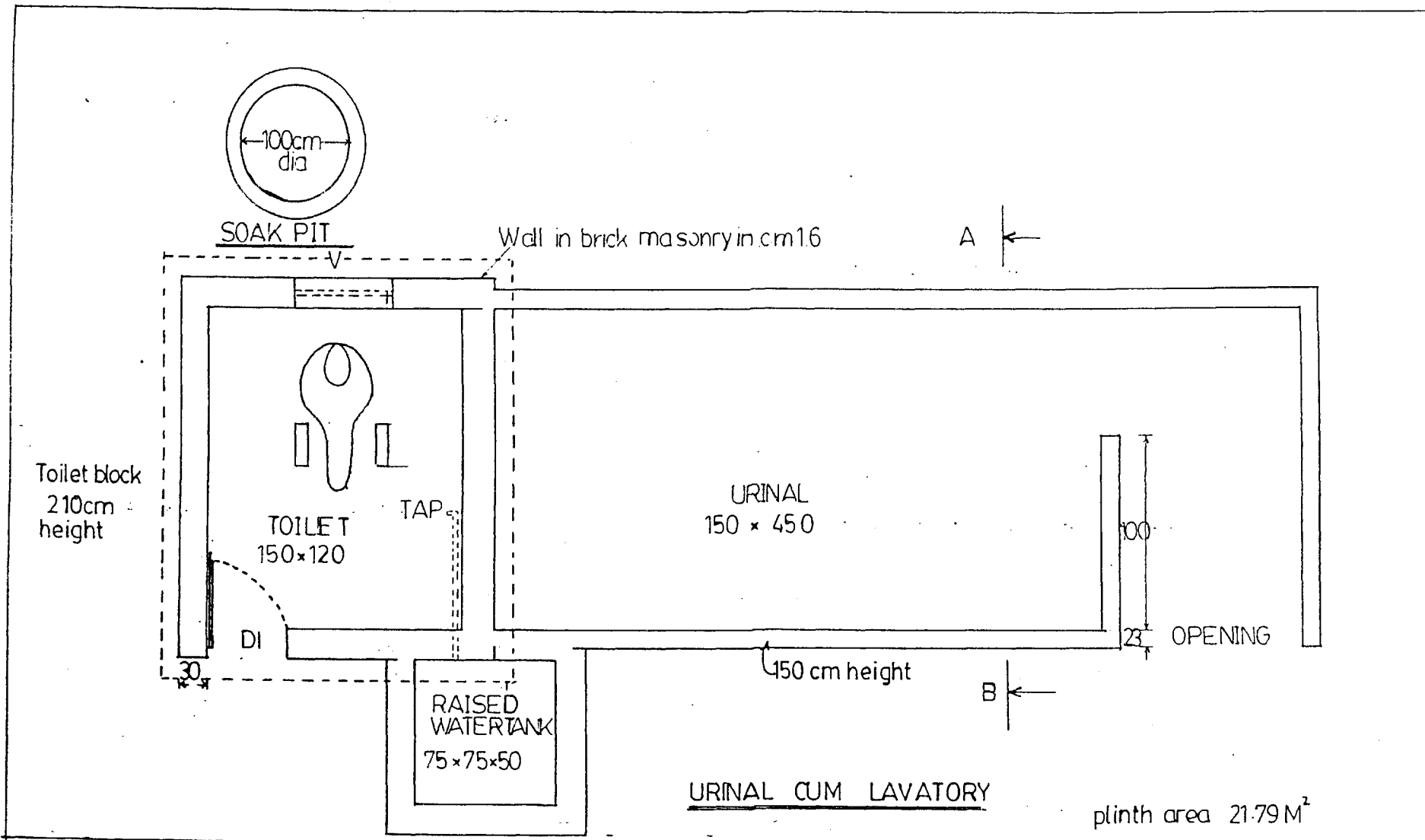
DETAILS OF THREE SEATED ROOM

DISTRICT PRIMARY EDUCATION PROJECT  
KERALA STATE

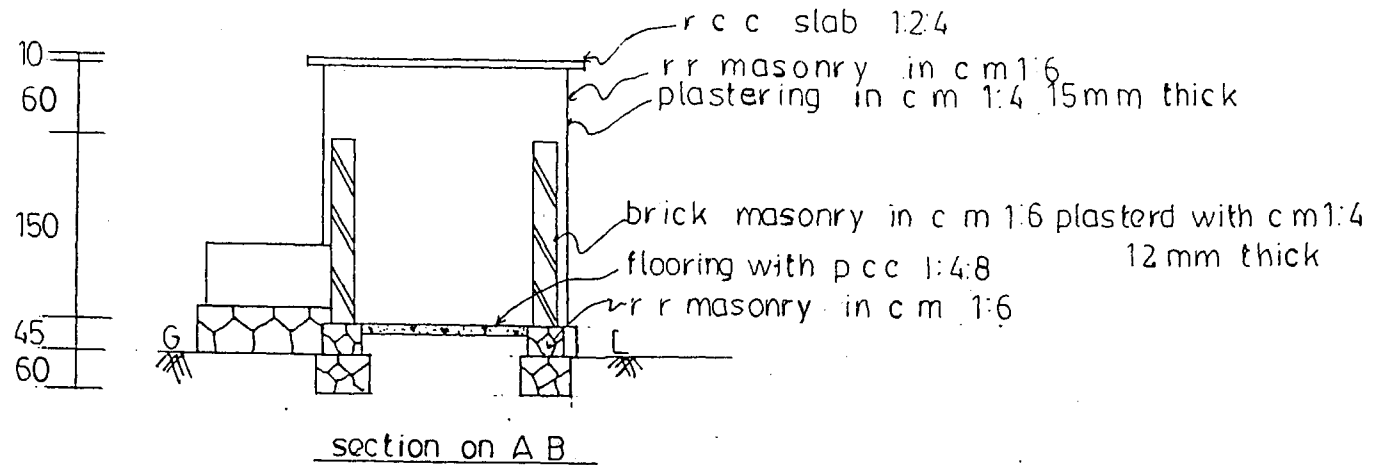
TYPE DESIGN FOR GURUKULAM HOSTEL BLDG

ROOM DETAILS

DRG No. DPEP/7/4/L



DISTRICT PRIMARY EDUCATION PROJECT KERALA	
TYPE DESIGN FOR URINAL CUM LAVATORY	
PLAN	Drg no D P E P/7/1988 F/L

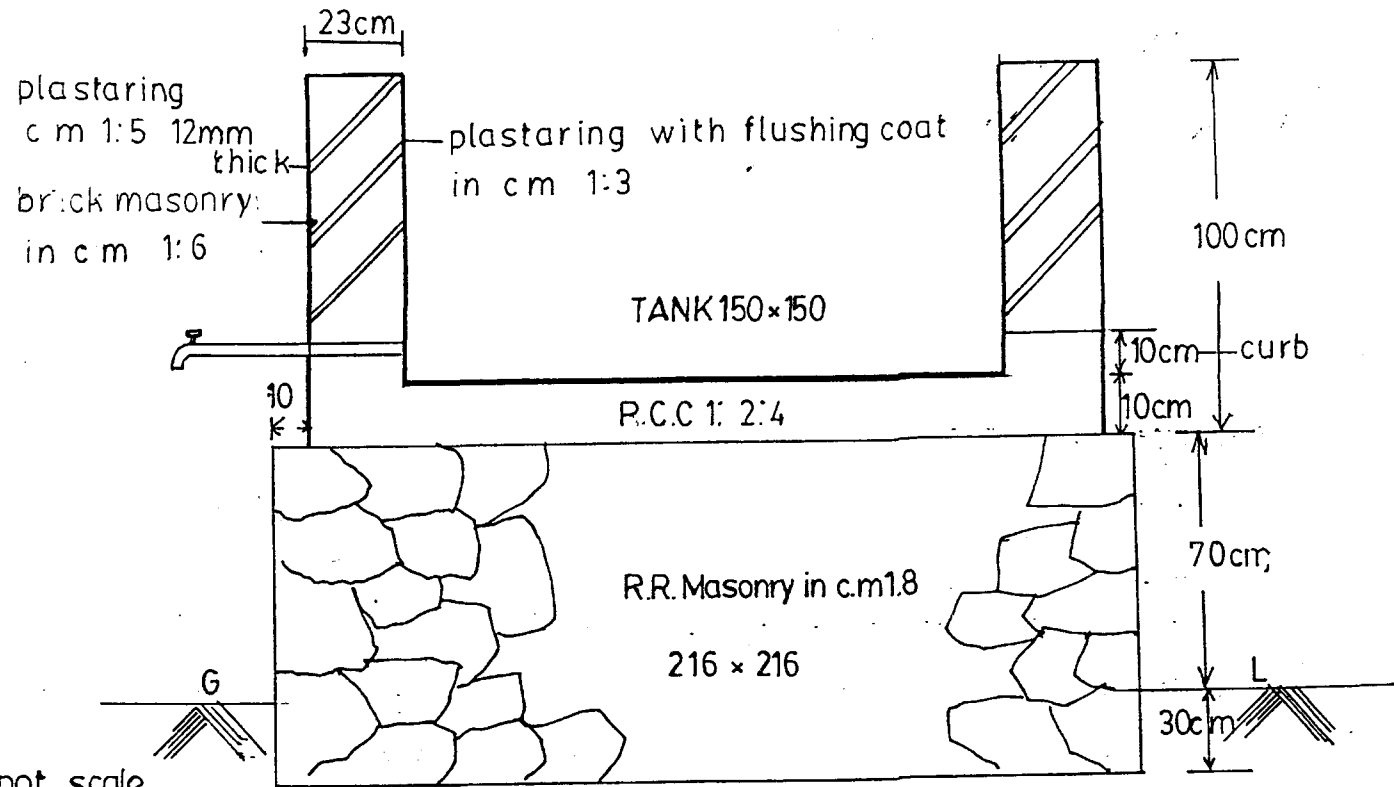


scale 1:50

DISTRICT PRIMARY EDUCATION PROJECT  
KERALA STATE

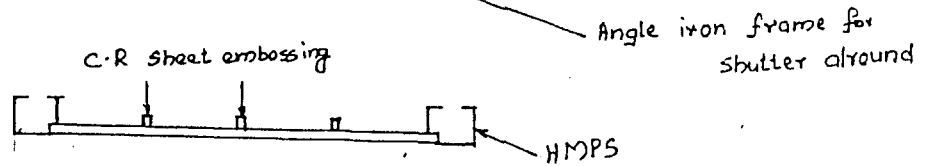
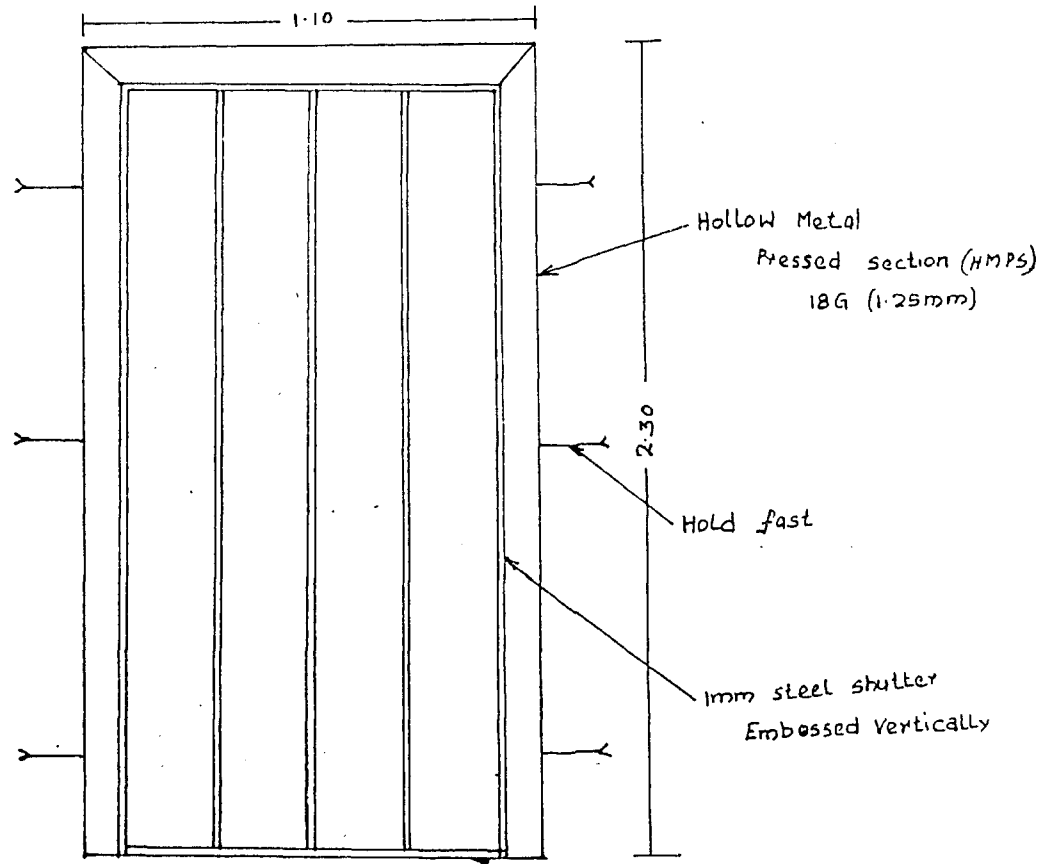
TYPE DESIGN FOR URINAL CUM LATRINE OF L.P. SCHOOL

CROSS SECTION | Drg no. D P E P/7/G/L



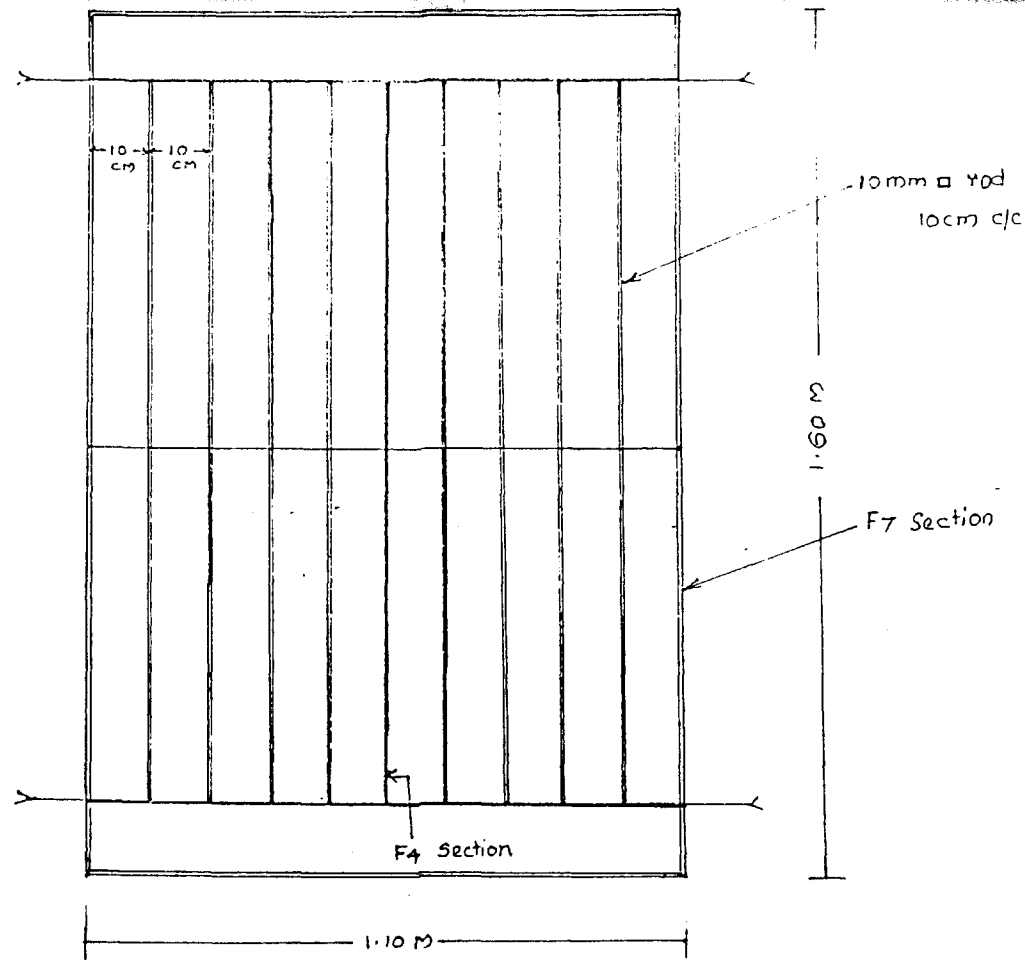
DISTRICT PRIMARY EDUCATION PROJECT  
KERALA STATE

TYPE DESIGN OF GROUND LEVEL WATER TANK  
WATER TANK     Drg no D P E P/4/1985 H/L



Steel Door

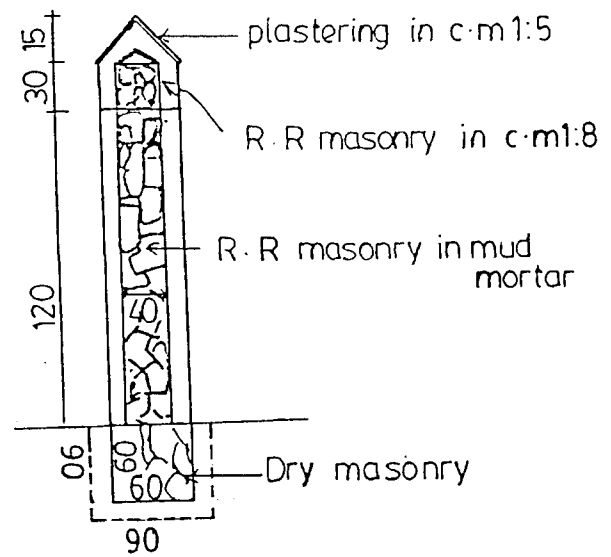
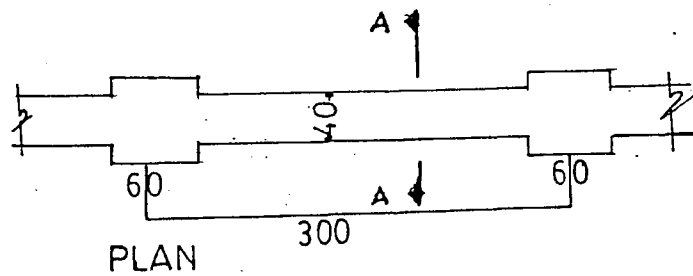
DISTRICT PRIMARY EDUCATION PROJECT KERALA STATE	
TYPE DESIGN FOR STEEL DOOR / WINDOW	
DOOR DETAILS	Dwg No. DPEP/9/A/B



Steel Windows

DISTRICT PRIMARY EDUCATION PROJECT KERALA STATE		
TYPE DESIGN FOR STEEL DOOR/WINDOW		
WINDOW DETAILS	DRG No. DPEP/9/B/B	





SECTIONAL ELEVATION A-A

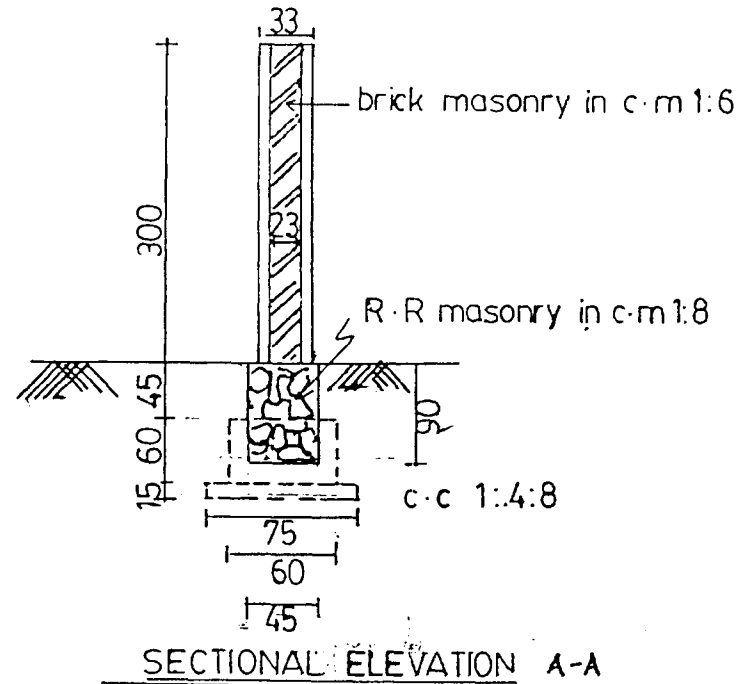
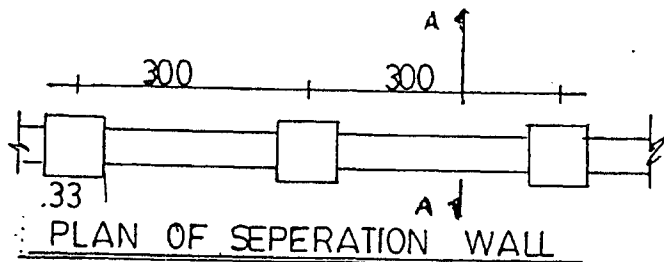
COMPOUND WALL DETAILS

not in scale

DISTRICT PRIMARY EDUCATION PROJECT  
KERALA STATE

TYPE DESIGN FOR THE COMPOUND WALL OF SCHOOL BLDG

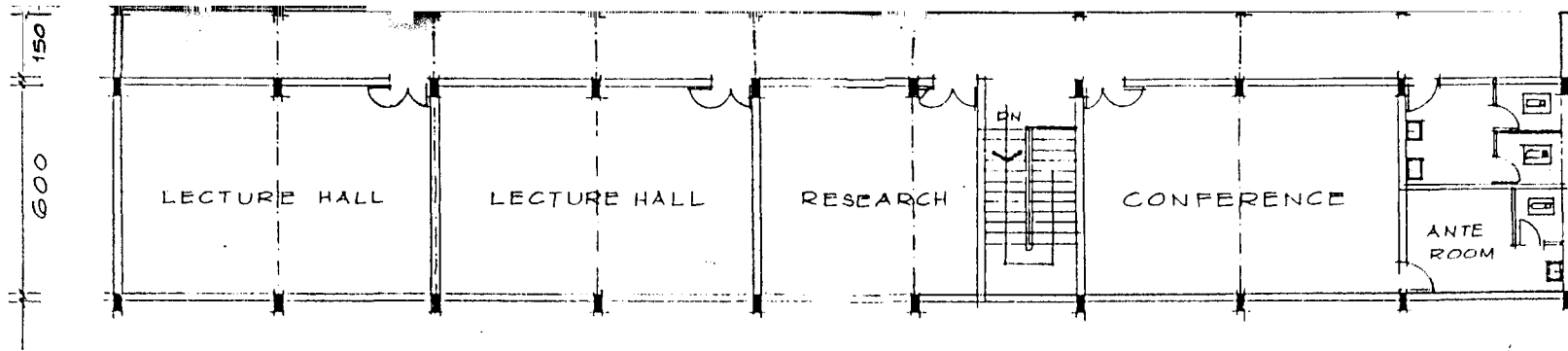
PLAN & CROSS SECTION Drg no. D P E P/ 5/A



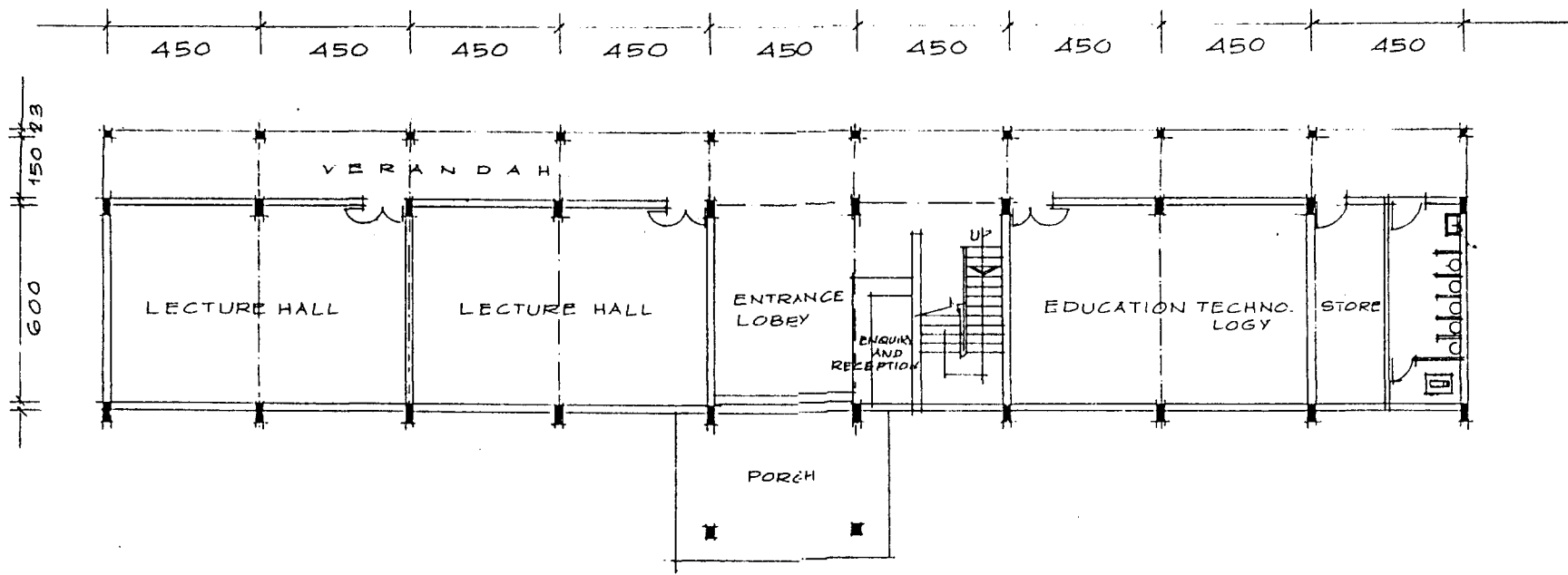
DISTRICT PRIMARY EDUCATION PROJECT  
KERALA STATE

TYPE DESIGN FOR THE SEPERATION WALL OF CL.RMS

PLAN & CROSS SECTION | Drg no. D P E P/3/A

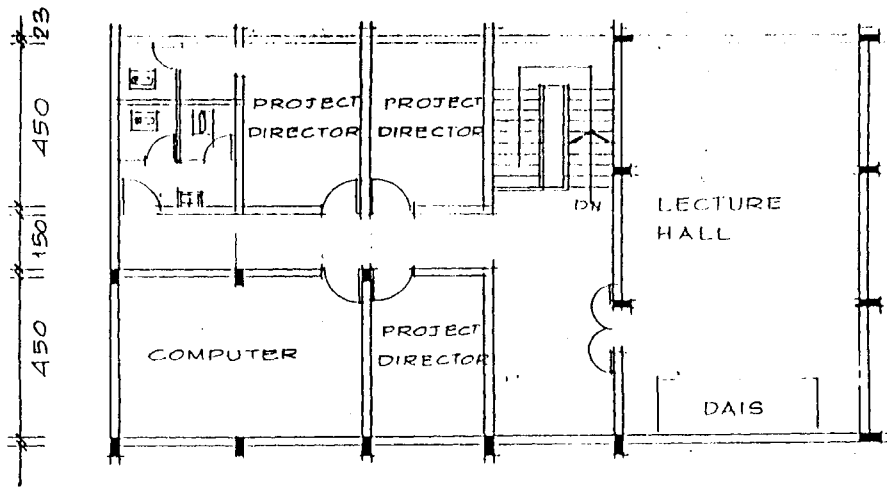


FIRST FLOOR PLAN SCALE 1:100

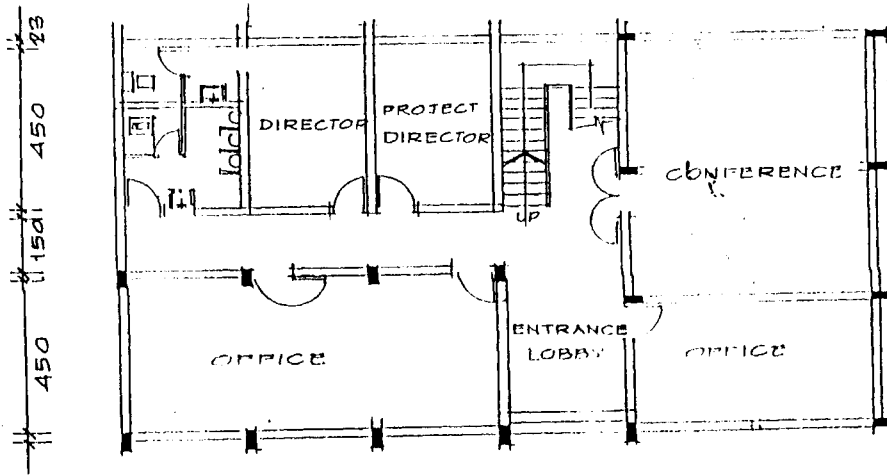
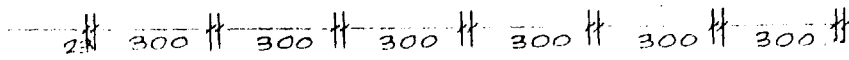


GROUND FLOOR PLAN SCALE 1:100

DISTRICT PRIMARY EDUCATION PROJECT KERALA  
 CONVERSION OF SIE TO SCERT

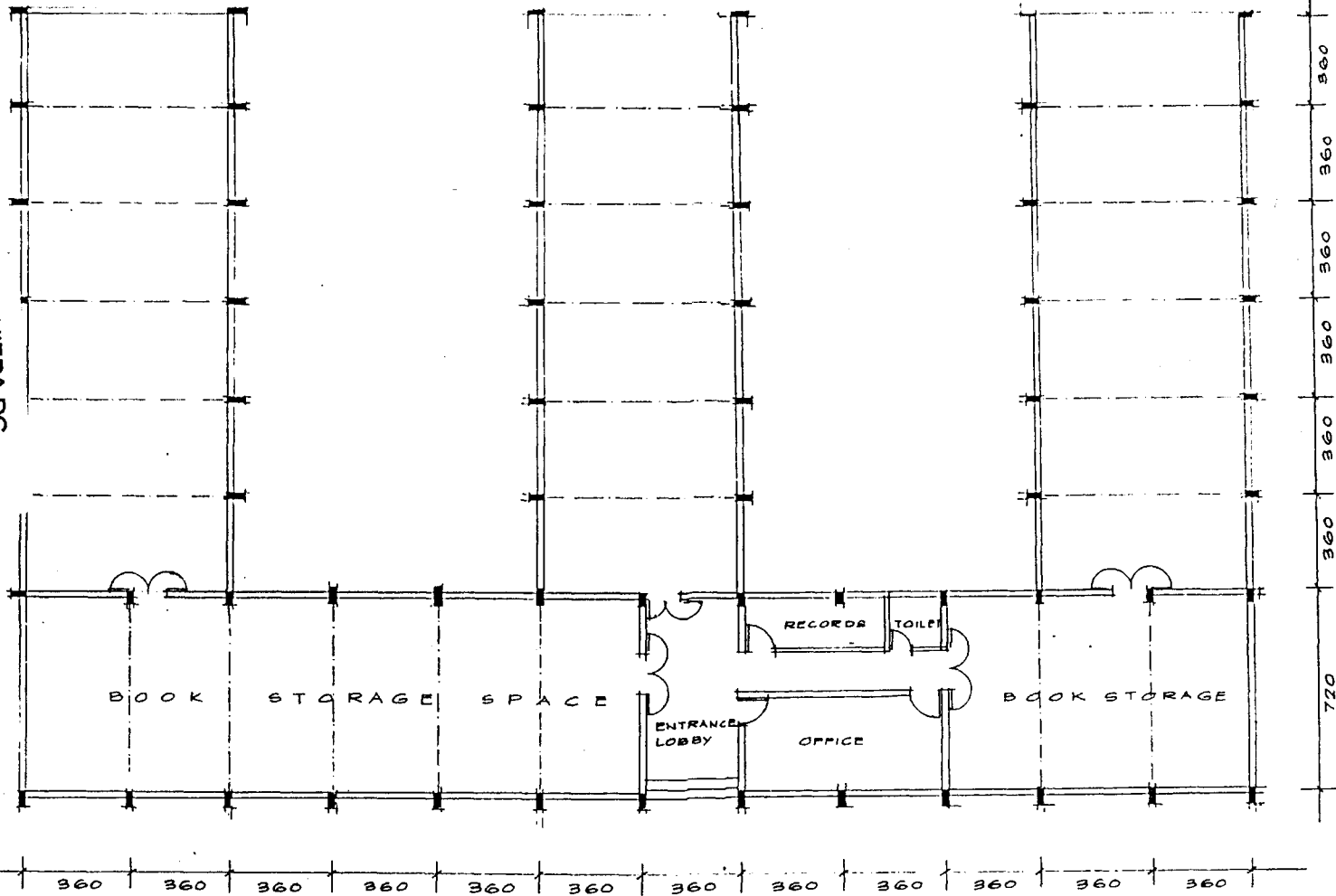


FIRST FLOOR PLAN SCALE 1:100



GROUND FLOOR PLAN SCALE 1:100

DISTRICT PRIMARY EDUCATION PROJECT KERALA  
 PRIMARY EDUCATION DEVELOPEMENT SOCIETY OF KERALA (P.E.D.S.K)  
 OFFICE CUM MANAGEMENT SYSTEM



GROUND FLOOR PLAN SCALE 1:100

# DISTRICT PRIMARY EDUCATION PROJECT KERALA CENTRAL TEXT BOOK DEPOT AT TVM.

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