

EAST TIMOR EMERGENCY SCHOOL READINESS PROJECT

REVIEW OF PROTOTYPE SCHOOL DESIGNS

World Bank Implementation Specialist
November 26th 2000.

1. Prototype Lowland Primary School

1.1 Verandas

1.1.1 The verandas at 3 metres wide are very generous. If cost is likely to be a problem, they could be reduced to 2 metres. The finish to the verandas is shown as concrete paving slabs. A more maintenance free and probably more economic finish would be a concrete slab as in the classrooms.

1.1.2 Recommendations

- § Reduce veranda width to 2 metres
- § Veranda floor to be concrete slab

1.2 Gable walls

1.2.1 The polycarbonate sheeting on the gable walls of the buildings will allow the sun to penetrate into classrooms, cause discomfort due to over heating and are not necessary for lighting (the central classrooms do not have them).

1.2.2 Recommendations

- § Replace polycarbonate sheeting with timber battens.

1.3 Offices and Stores

1.3.1 The 3-classroom units have an office but no store.

1.3.2 Recommendations

- § At least one 3-classroom unit should have a store.

1.4 Windows

1.4.1 It is proposed to provide vertically pivoted windows. How robust and maintenance free will they be? Top-hung timber windows are well understood and made by local carpenters.

1.4.2 Recommendations

- § Windows should be top-hung timber windows

1.5 Roof Insulation

1.5.1 It is not clear if any insulation (for heat and sound) is being provided between the roof and ceiling sheets.

1.5.2 Recommendations

§ Provide insulation in the roof space if not already provided.

1.6 Roof Overhangs

1.6.1 Is the roof overhang on the rear side (away from the veranda) wide enough to keep the sun out of the classrooms?

1.6.2 Recommendations

§ Check sun angles for the East Timor latitudes and provide wide enough roof overhangs to ensure that the sun does not penetrate into rooms between 8am and 4 pm.

2. Prototype Highland Primary School

2.1 All the above comments for the Lowland Primary School also apply to the Highland Primary School.

2.2 Mono-pitch Roofs

2.2.1 What is the purpose of the mono-pitch roof to the classrooms? It will be more expensive to construct and (with the polycarbonate sheeting) will allow sun penetration into classrooms causing overheating and discomfort. In order to build as many good new schools as possible, construction costs will have to be kept down and this roof type will be more expensive than the gable type while giving no advantages only the positive disadvantage of allowing direct sunlight into the classrooms. There are also maintenance issues because of the exposure of the top purlin and rafters to the weather.

2.2.2 Recommendations

§ If this roof type has to be used, it is suggested that the polycarbonate panels are omitted and replaced with 'Colorbond' sheets and/or timber louvres to allow ventilation.

3. Prototype Junior Secondary School

3.1 Site layout

3.1.1 All buildings should face north/south if possible in order to reduce sun penetration into classrooms and other spaces especially in the afternoons. This means that they should not be arranged in the 'U'-shaped layout as shown and that the orientation of the Administration Building is questionable.

3.2 Verandas

3.2.1 The comments on verandas in 1.1 above apply equally here.

3.3 Gable Walls

3.3.1 The comments about the polycarbonate sheeting in the gable walls in 2.1 above apply equally here.

3.4 Mono-pitch Roofs

- 3.4.1 The comments in 2.2 above about the monopitch roofs apply to these buildings equally and the same recommendations apply.

3.5 Accommodation

- 3.5.1 The accommodation shown is for a four-stream school (i.e. 4 x 3 classrooms). The size of a school to be provided at any particular location will depend on the local junior secondary school age population but in all probability a range of sizes will have to be provided from a single stream (3 classroom) school upwards. This will affect the size and provision of ancillary accommodation such administration areas, teachers' rooms, stores, etc.
- 3.5.2 The only teaching accommodation shown are general classrooms and another space is required for science and vocational teaching, handicrafts, etc.

3.5.3 Recommendations

- § The accommodation to be provided at any particular location should be determined after the school mapping exercise for the Sub-Districts where the prototype schools will be built, is completed.
- § Provide a Multipurpose Room, larger than a general classroom (probably 8 x 12 metres) to give adequate space for large tables for project work, etc with a bench along one window wall with one or two sinks. This Unit should have at least one, preferably two Stores and could form a separate building if linked with the Library.
- § In small, rural single-stream (3 classroom) schools, the Multipurpose Room could be made larger (8 x 15 metres) and also be used as the Library (with its own Store) to avoid more expensive, separate Library provision.

3.6 Administration

- 3.6.1 The Administration Building has an office (presumably for the Head Master) and one area for staff and it is not clear whether this is for administration staff and/or teachers.
- 3.6.2 The only Store provided in the school is a small one in the administration area.

3.6.3 Recommendations

- § There should be separate accommodation for teachers and for administration staff (the size of which will depend on the size of the school and number of teachers and administration staff). Both rooms should have their own stores for stationery and other materials.
- § There should be at least one more Store, probably in a Classroom Unit.

3.7 Library

- 3.7.1 The Library as shown in the Administration Building is too small for the size of school. It should really be able to accommodate at least half a class (25 pupils) if not a full class (50 pupils). It should also have its own store. Its position also seems questionable; should pupils have to pass the administration area to get to the Library?

3.7.2 Recommendations

- § Increase the size of the Library and provide it with a secure store. Move away from administration area and link it with proposed Multipurpose Unit (see above) to form a separate unit.

3.8 Toilets

- 3.8.1 It is proposed to use composting toilets in the schools. This will be a new technology in East Timor and it seems a good idea to try it out to see if it works and if it is acceptable culturally. This type of toilet does not require water to work and this will be of great benefit especially in rural schools that frequently do not have running water.

3.8.2 Recommendations

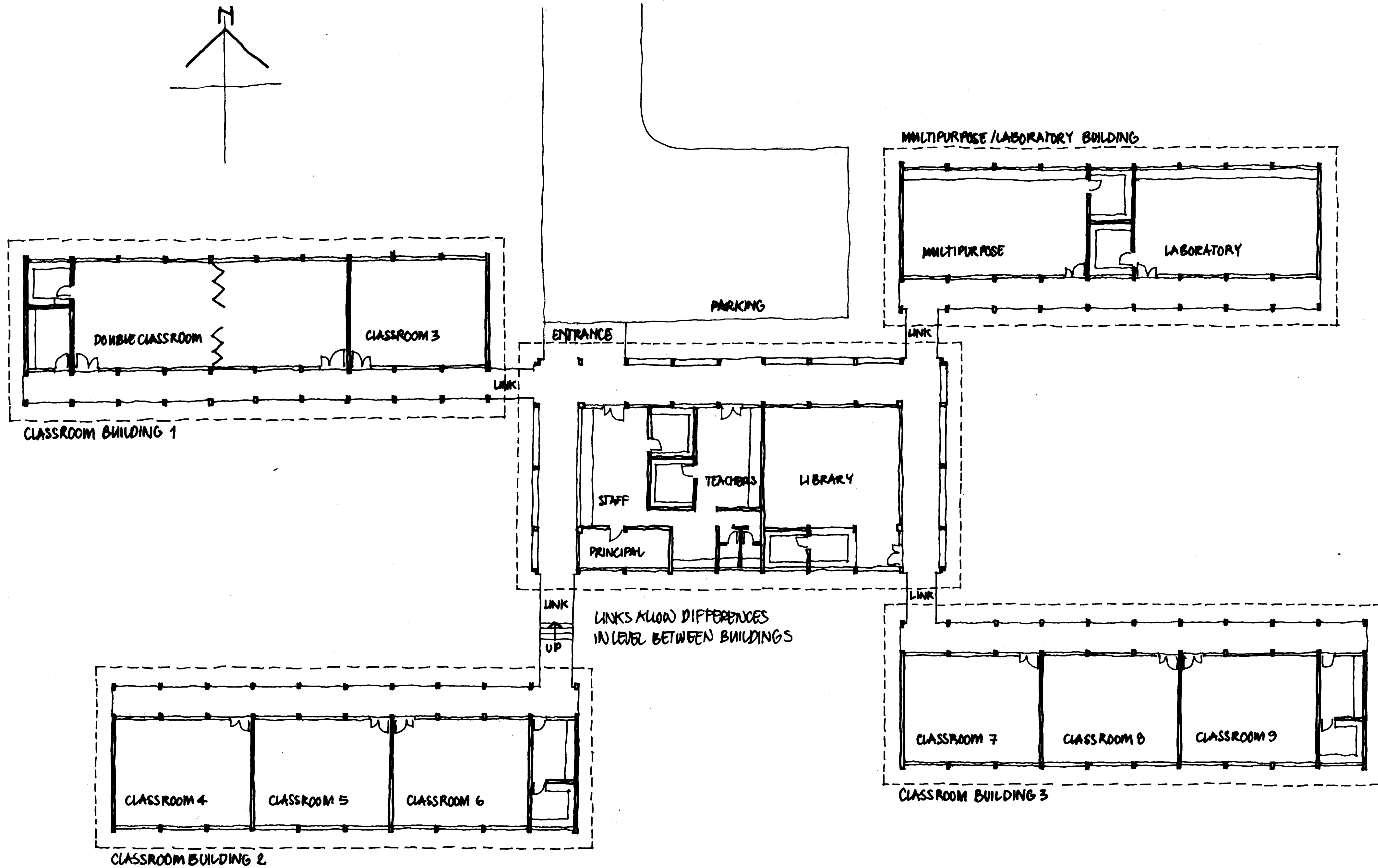
- § Polycarbonate sheeting should not be used in the roof as this will make the toilets very hot.
- § If this type of toilet is not acceptable then the standard 'Asian' toilet that is flushed with a scoop and has a small water storage tank adjacent, should be used.

3.9 Water

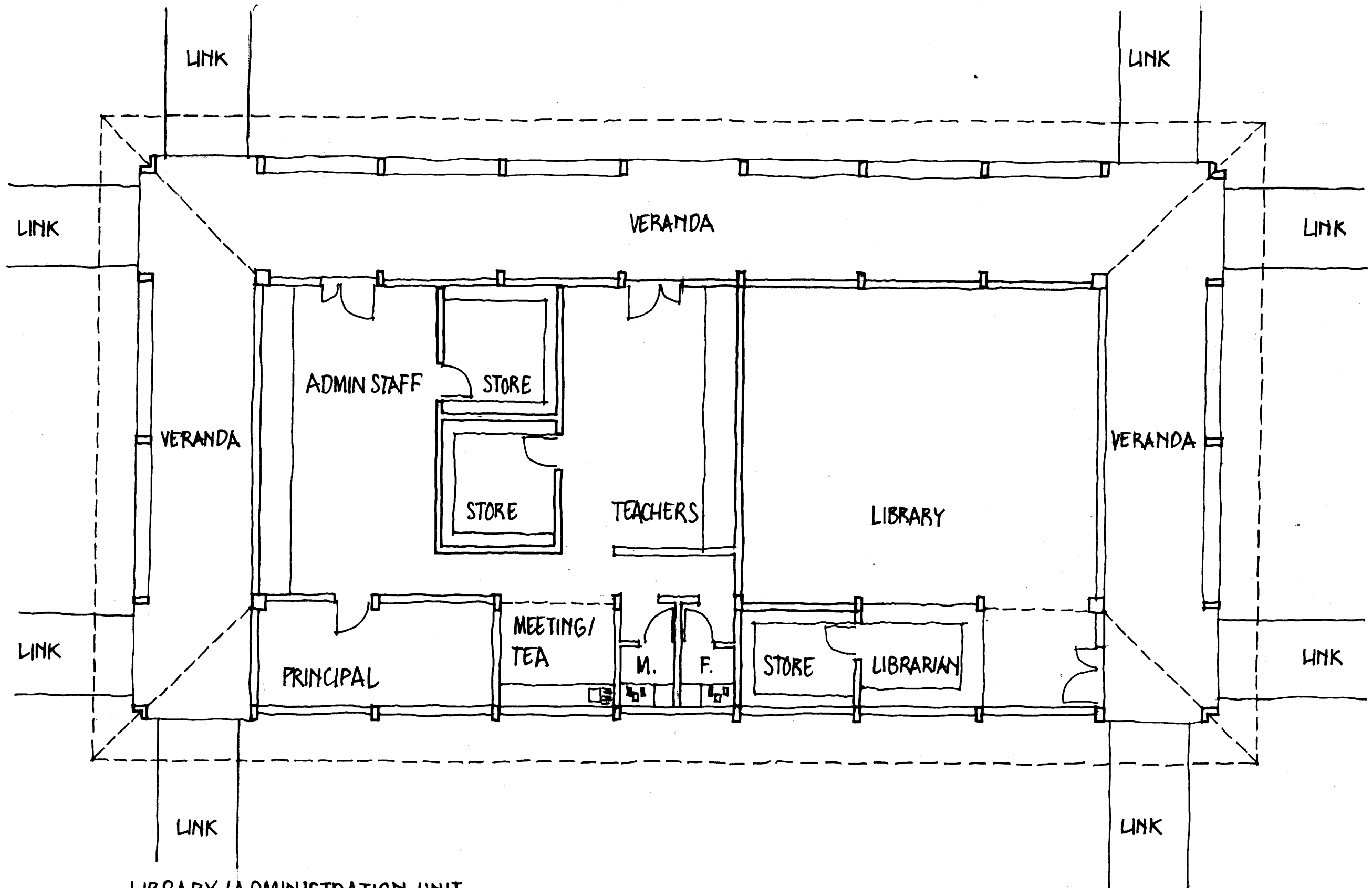
- 3.9.1 All schools should be supplied with water for drinking, washing hands, teaching, etc. In many rural schools this will be a problem as there will be no mains water supply. Storage tanks for collecting rainwater off roofs are not an adequate solution due to the long dry season.

3.9.2 Recommendations

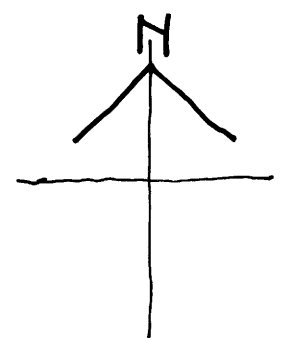
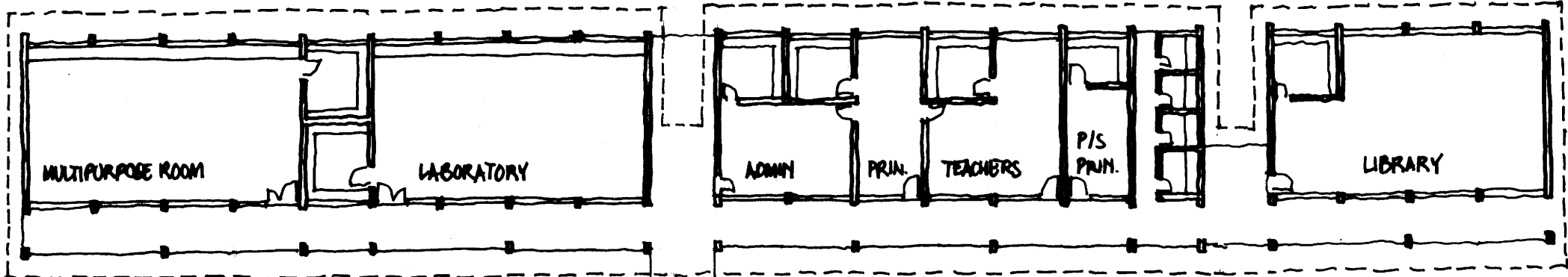
- § At schools where there is no main water supply, a lined, covered well with a hand-pump and access for a bucket should be provided. The wells should be located at least 30 metres from the nearest septic tank or soakaway.



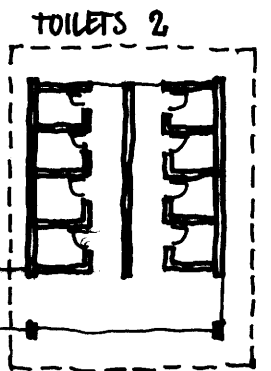
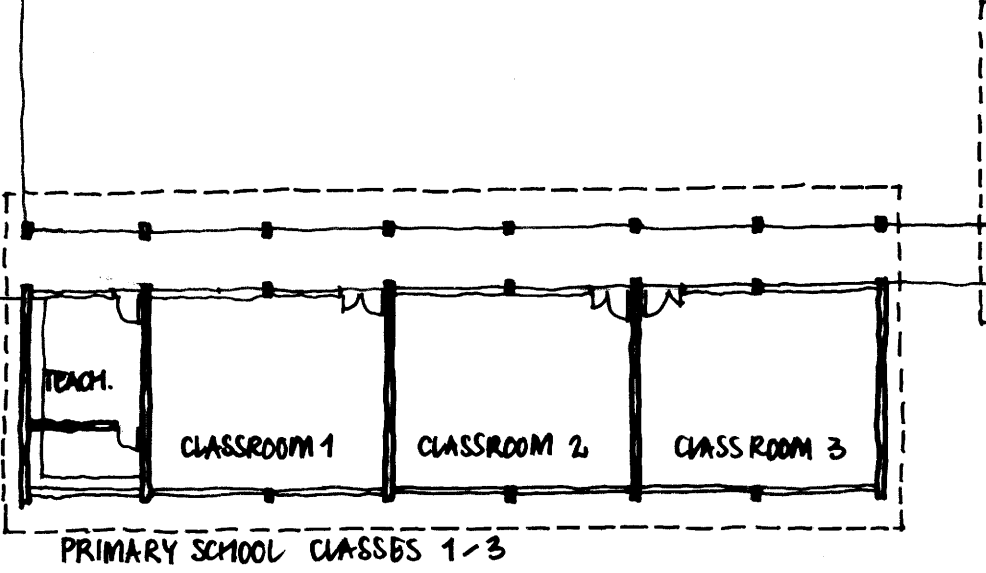
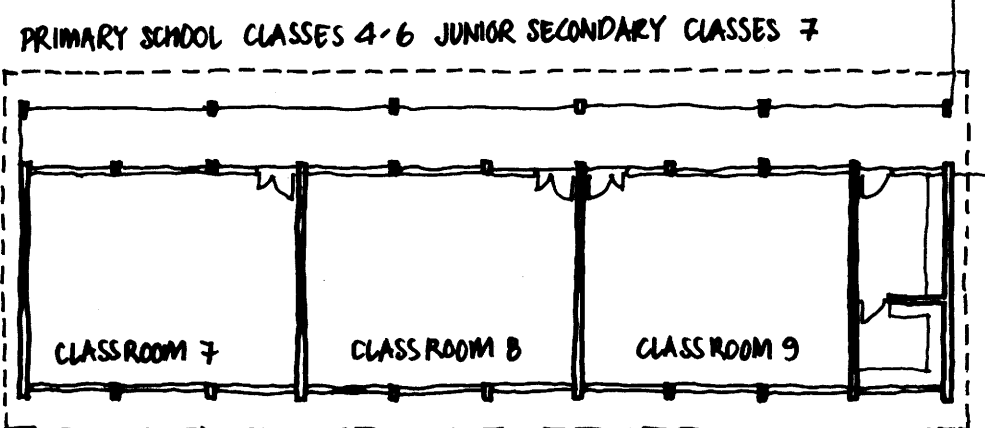
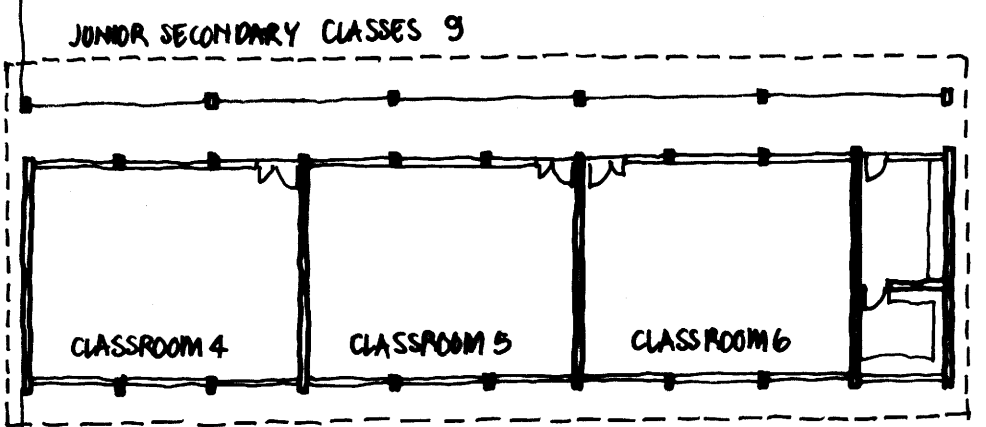
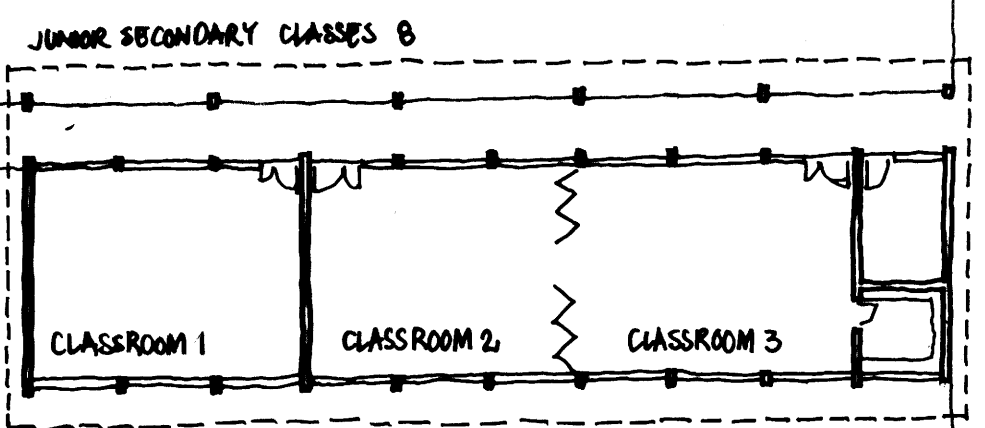
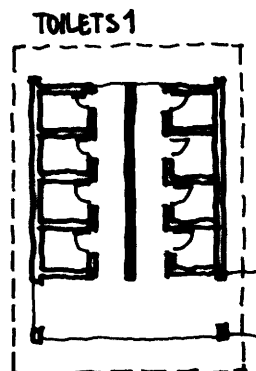
9 CLASSROOM PROTOTYPE SECONDARY SCHOOL
 LAYOUT MODIFIED TO ALLOW FLEXIBILITY IN LAYOUT
 ALL BUILDINGS TO BE ORIENTED NORTH-SOUTH
 PACIFIC ARCHITECTS DESIGN-MODIFIED



LIBRARY/ADMINISTRATION UNIT
 REVISED LAYOUT 1:100
 9 CLASSROOM PROTOTYPE SECONDARY SCHOOL
 PACIFIC ARCHITECTS DESIGN / MODIFIED

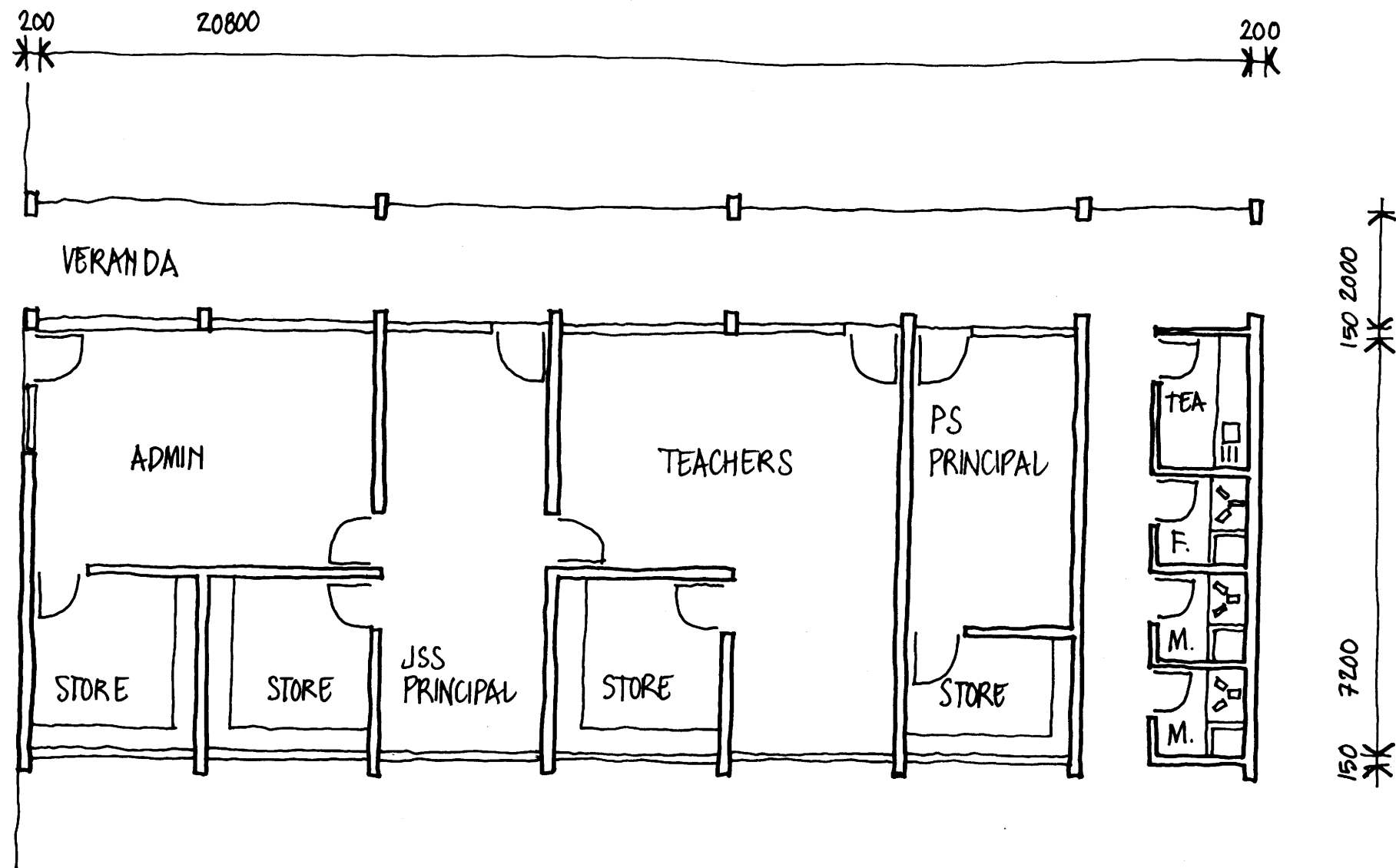


3 STREAM JUNIOR SECONDARY SCHOOL +
1 STREAM PRIMARY SCHOOL
TYPICAL LAYOUT

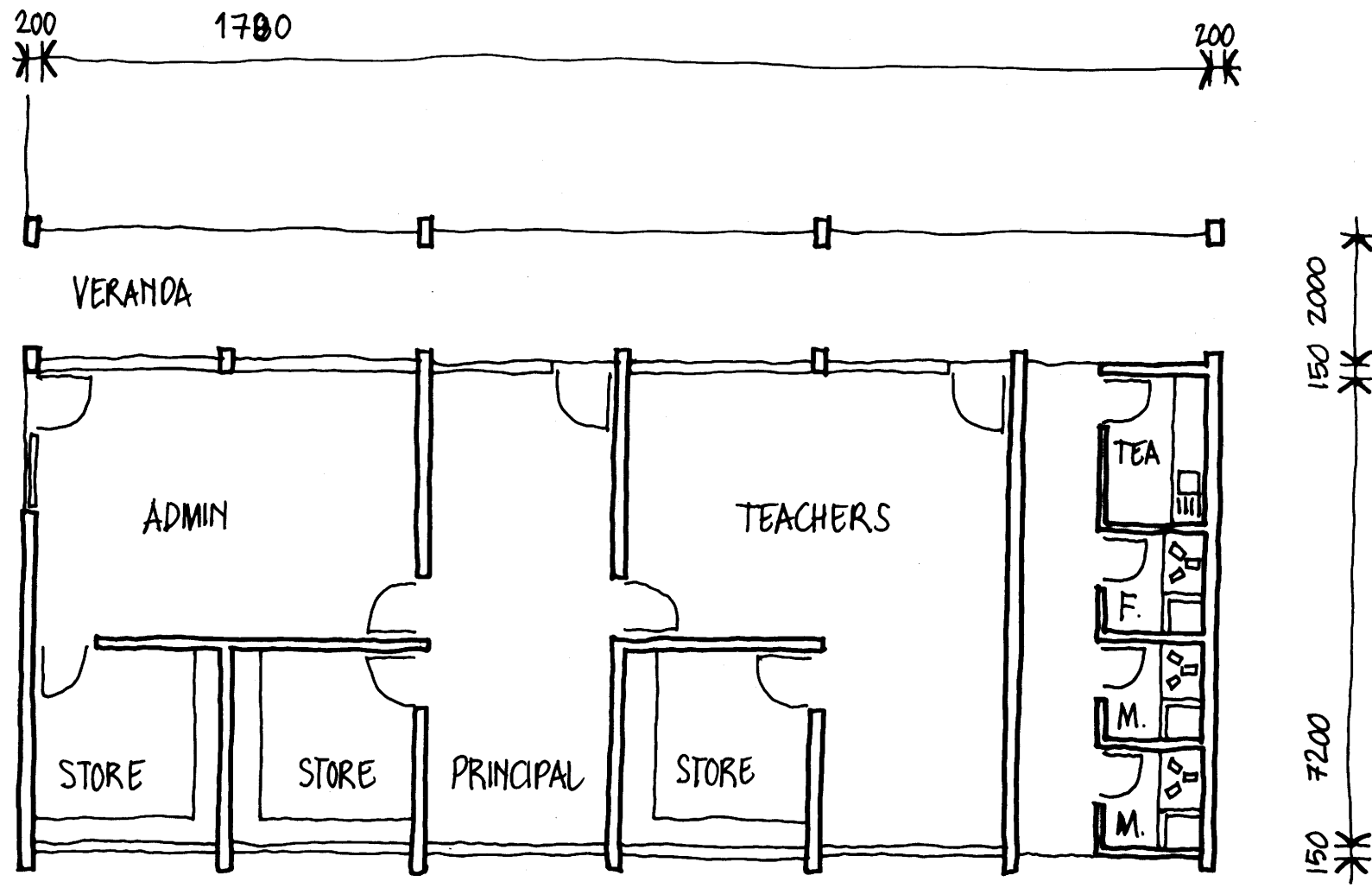


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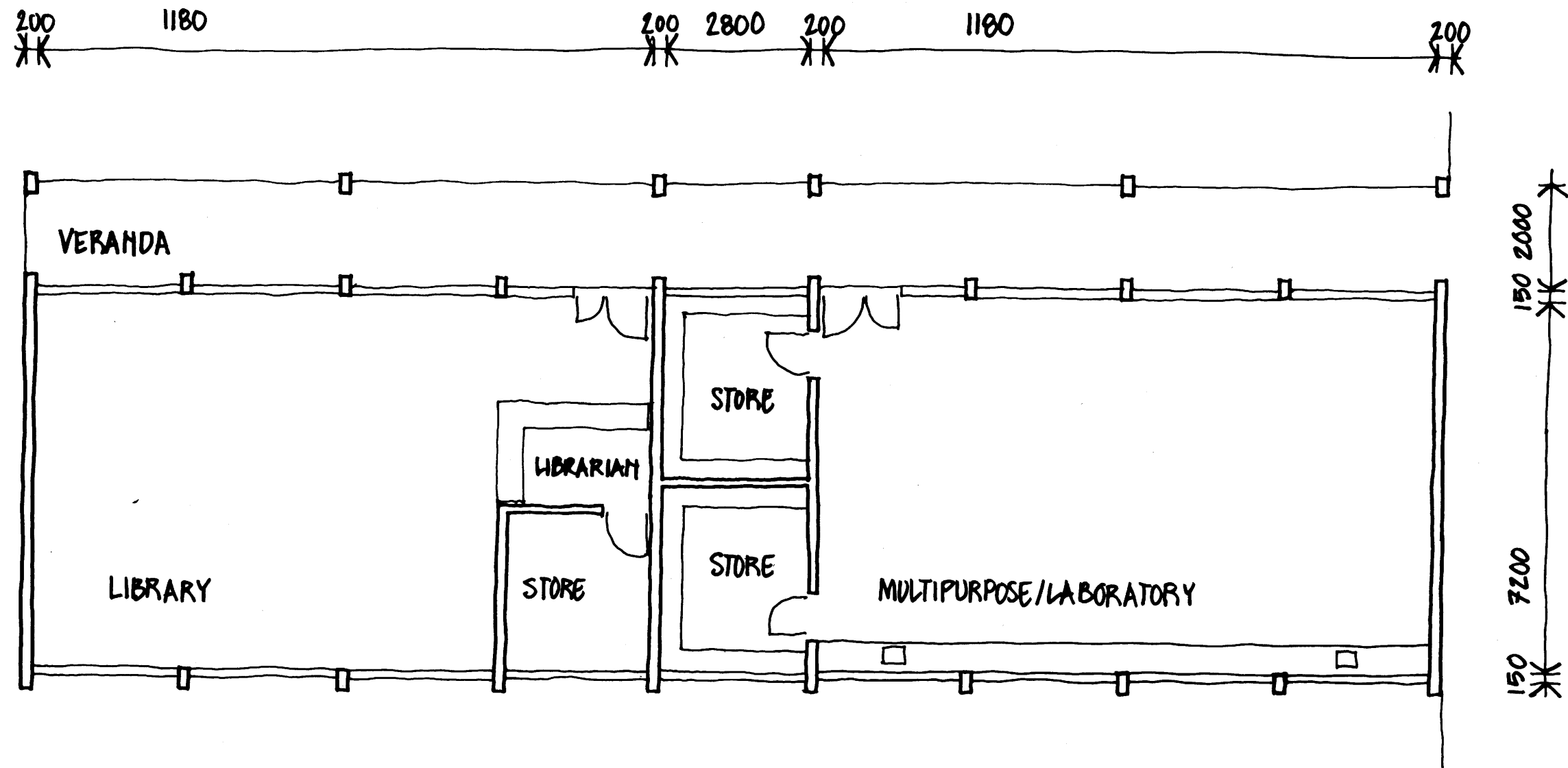
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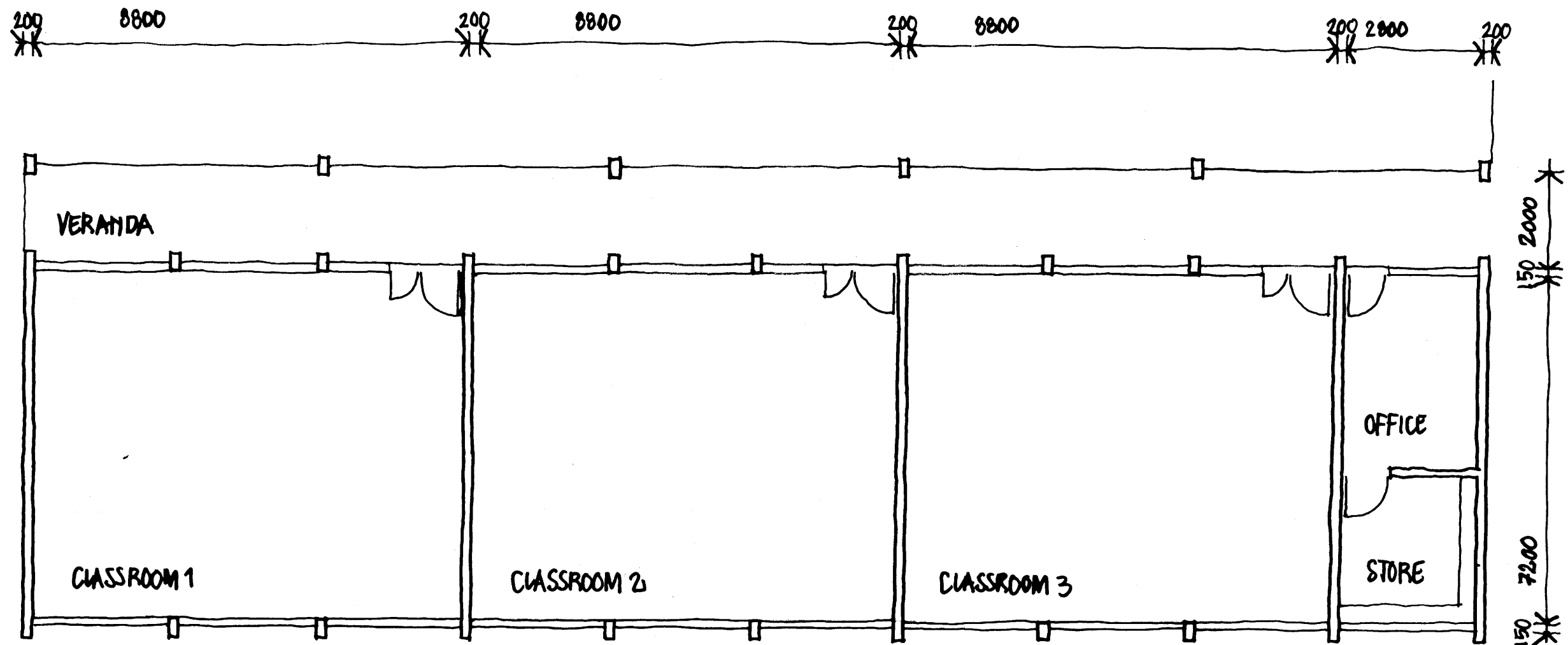
COMBINED JUNIOR SECONDARY & PRIMARY SCHOOL
 ADMINISTRATION UNIT
 REVISED LAYOUT



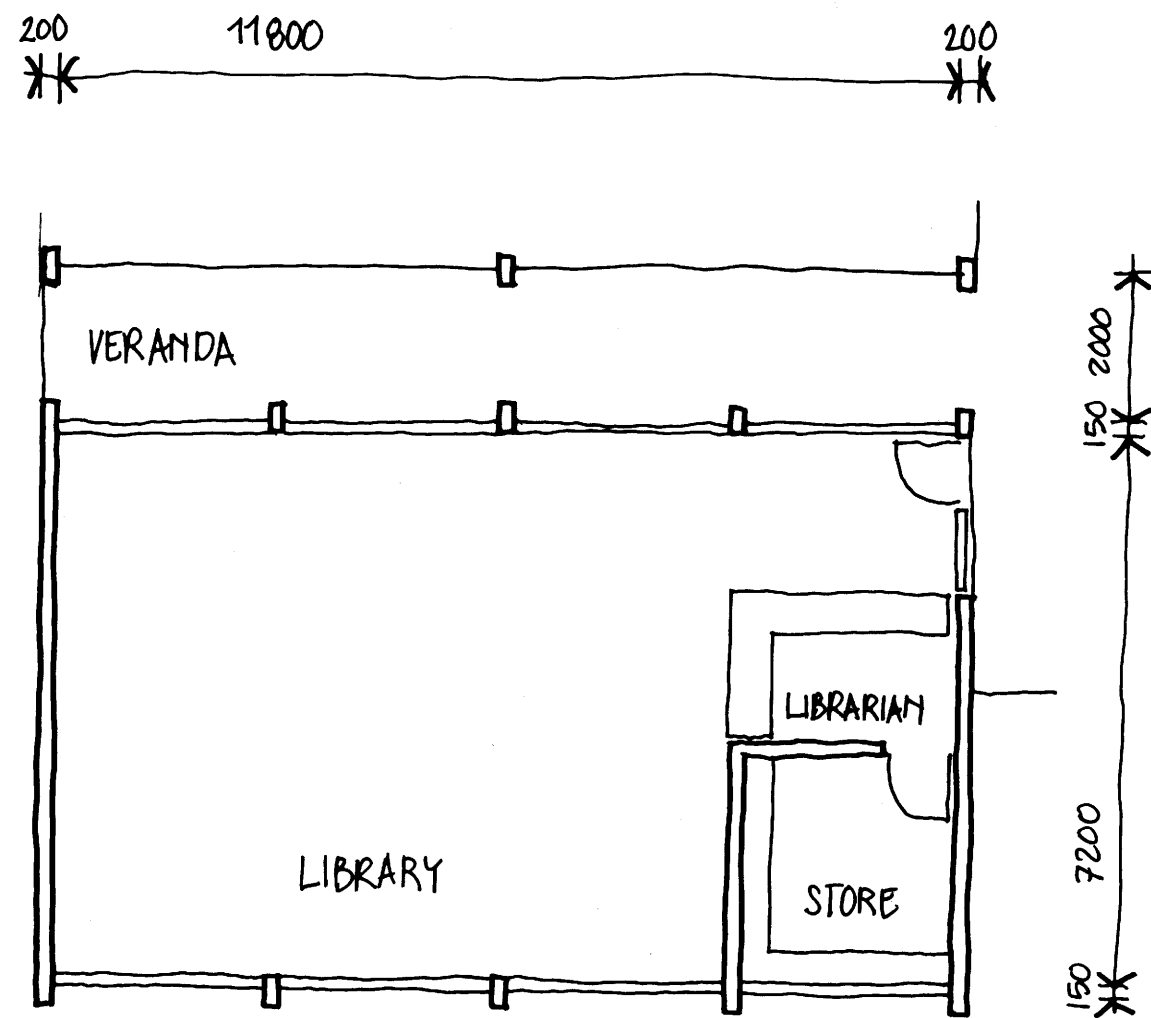
JUNIOR SECONDARY SCHOOL
 ADMINISTRATION UNIT
 REVISED LAYOUT



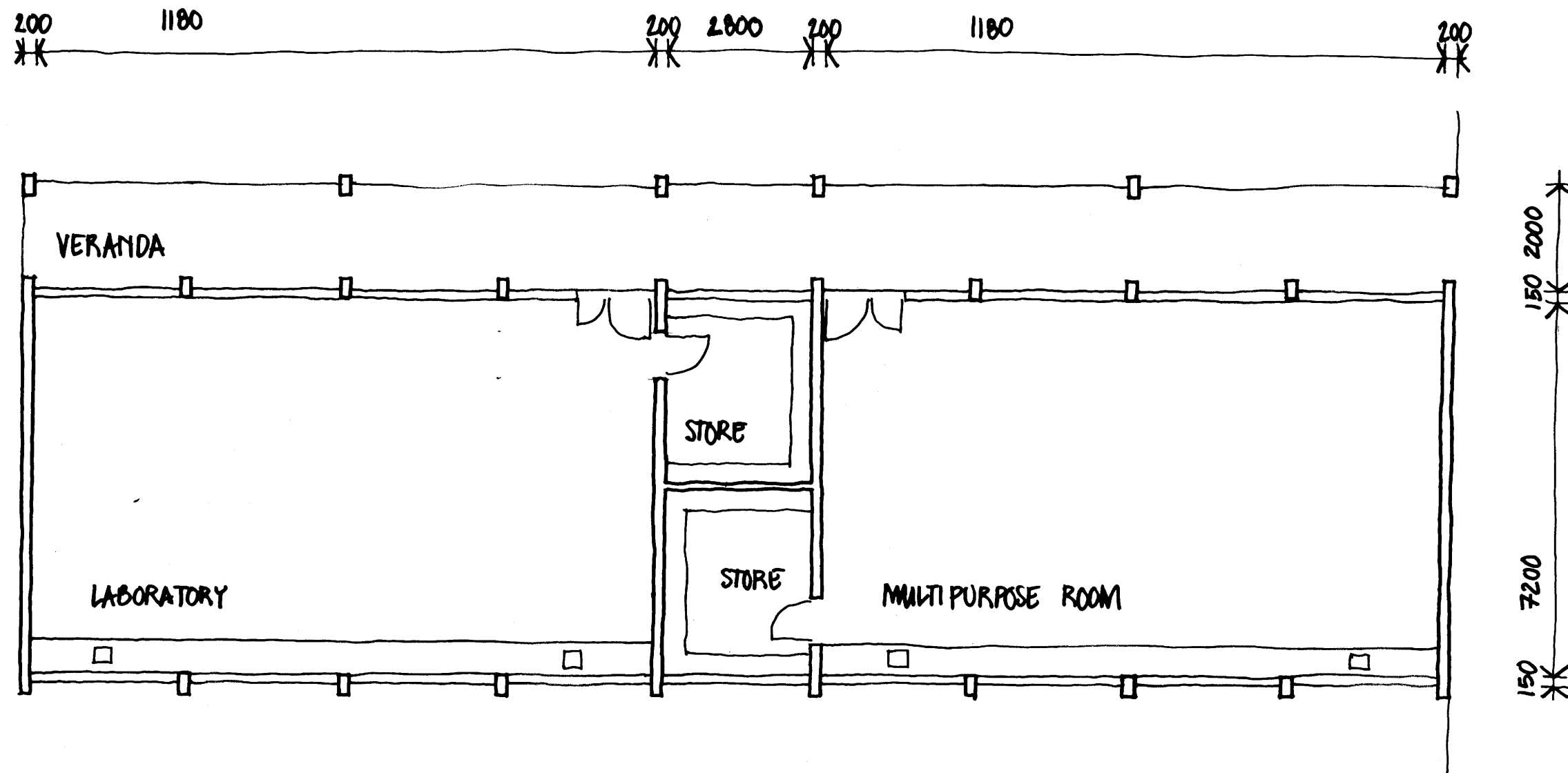
JUNIOR SECONDARY SCHOOL
 LIBRARY / MULTIPURPOSE ROOM - 6 CLASSROOM SCHOOL
 REVISED LAYOUT



JUNIOR SECONDARY SCHOOL
 3-CLASSROOM UNIT
 REVISED LAYOUT



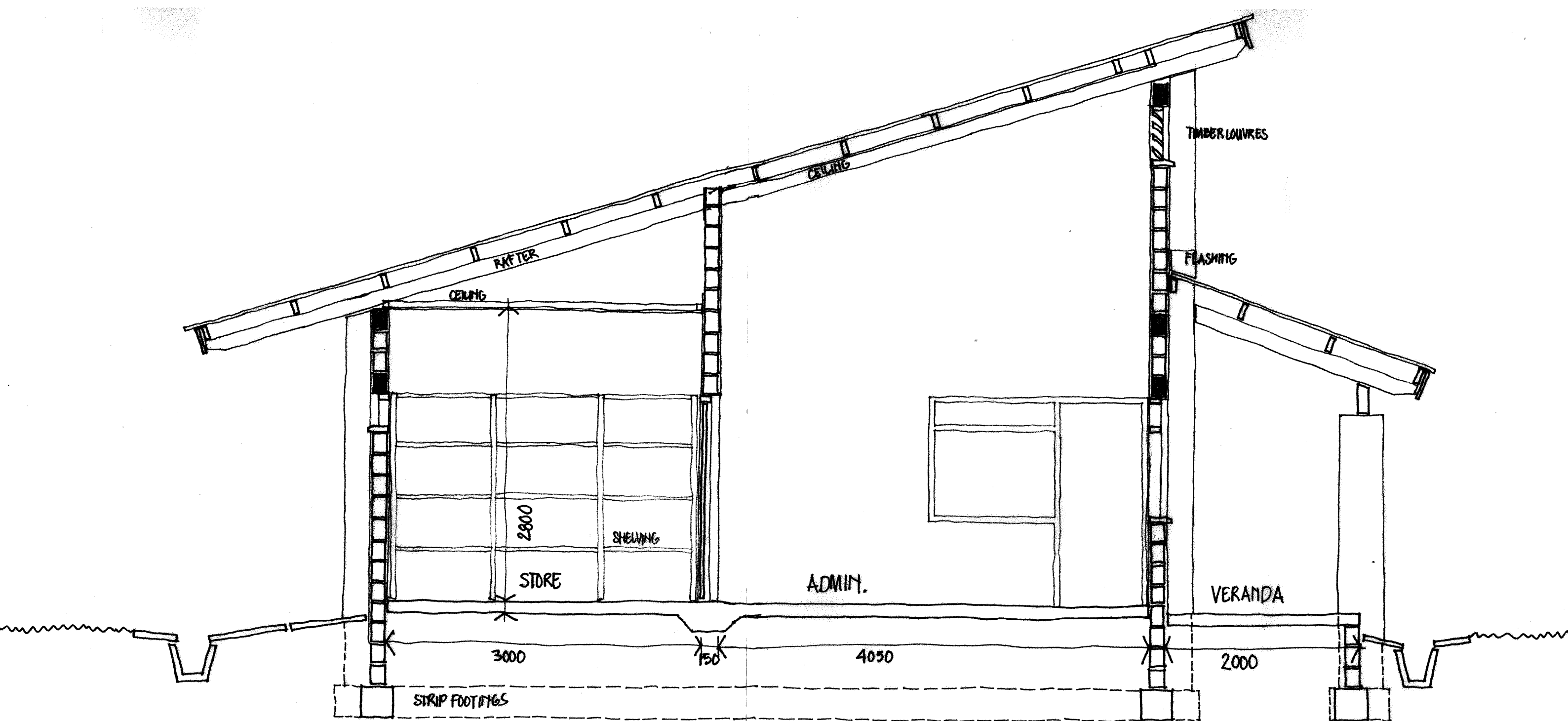
JUNIOR SECONDARY SCHOOL
 LIBRARY - 9-CLASSROOM SCHOOL
 REVISED LAYOUT



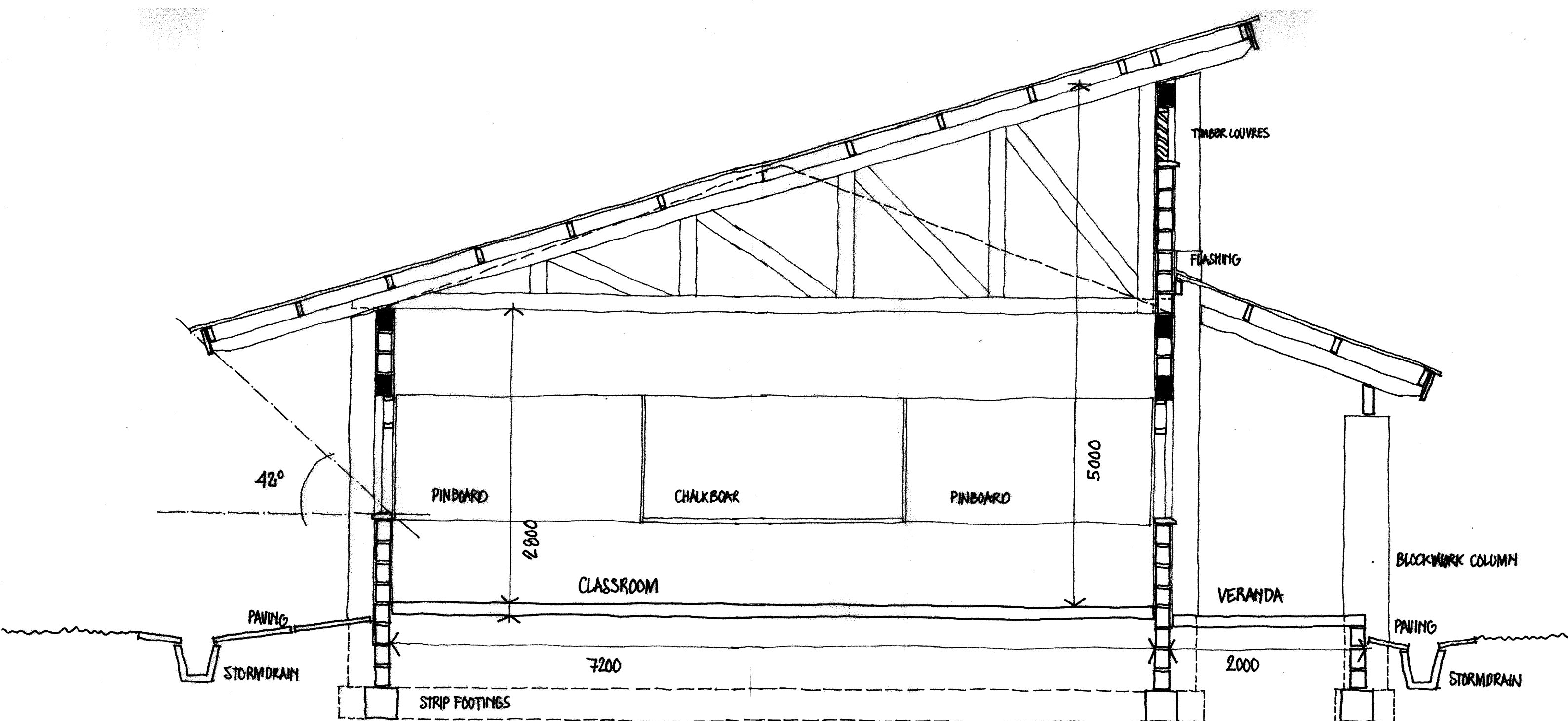
JUNIOR SECONDARY SCHOOL

LABORATORY/MULTIPURPOSE ROOM - 9 CLASSROOM SCHOOL

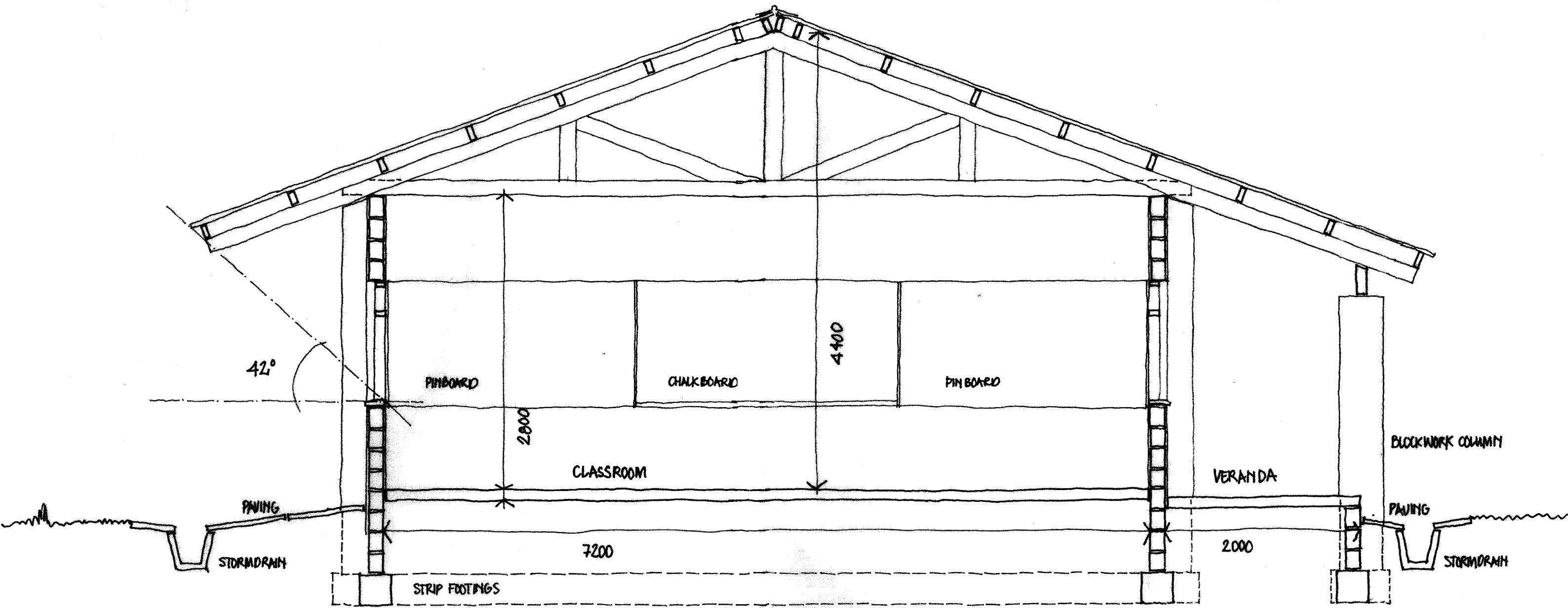
REVISED LAYOUT



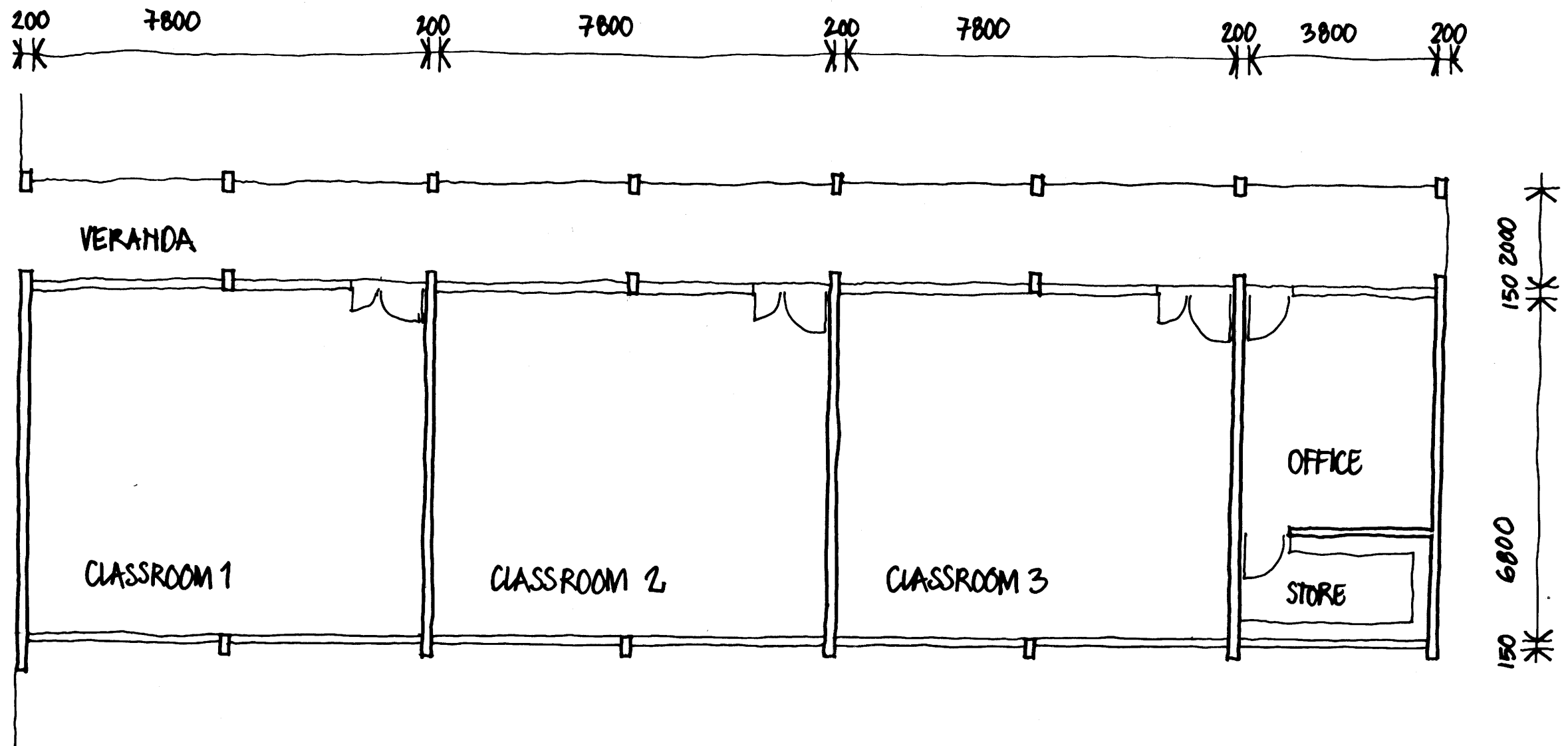
TYPICAL SECTION THRO' JUNIOR SECONDARY SCHOOL ADMINISTRATION



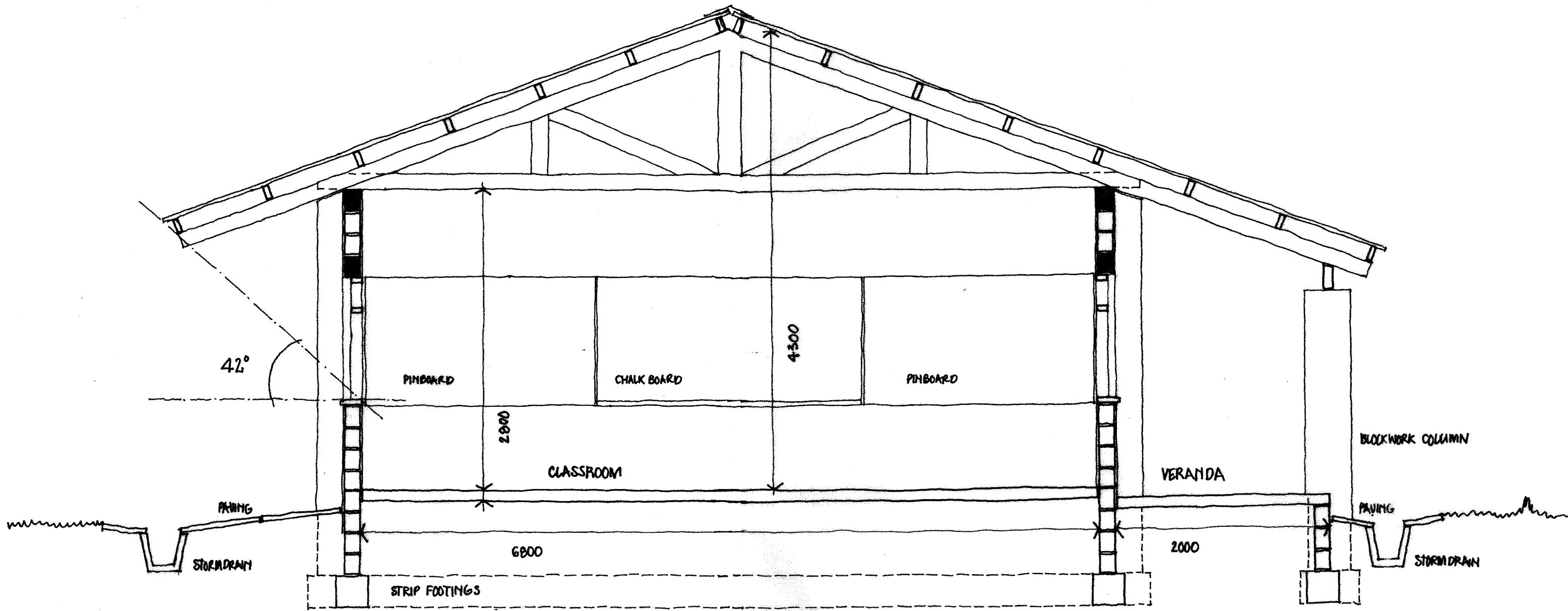
TYPICAL SECTION THRO' JUNIOR SECONDARY SCHOOL CLASSROOM - TYPE A.



TYPICAL SECTION THRO' JUNIOR SECONDARY SCHOOL CLASSROOM - TYPE D

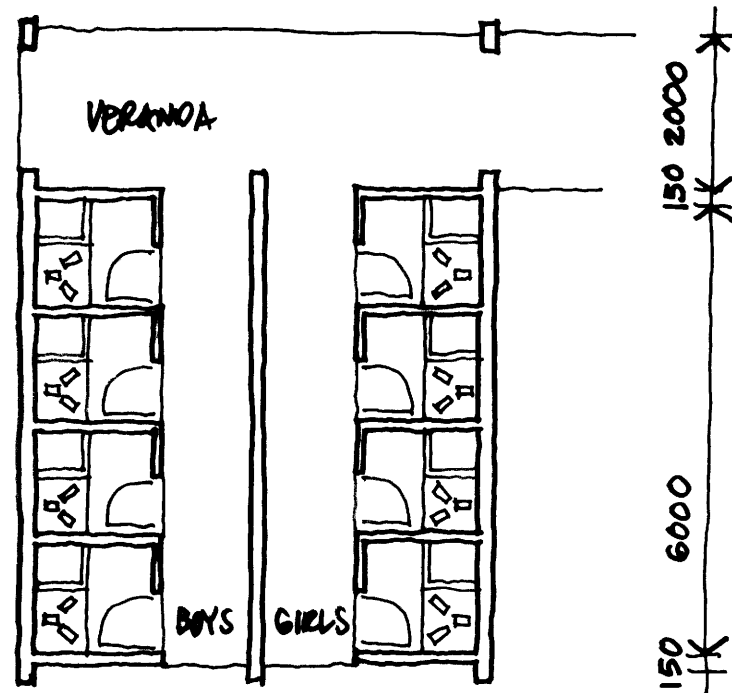


PRIMARY SCHOOL
 3-CLASSROOM UNIT
 REVISED LAYOUT



TYPICAL SECTION THRO' PRIMARY SCHOOL CLASS ROOM

200 5800 200
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PRIMARY SCHOOLS - 1 TOILET UNIT

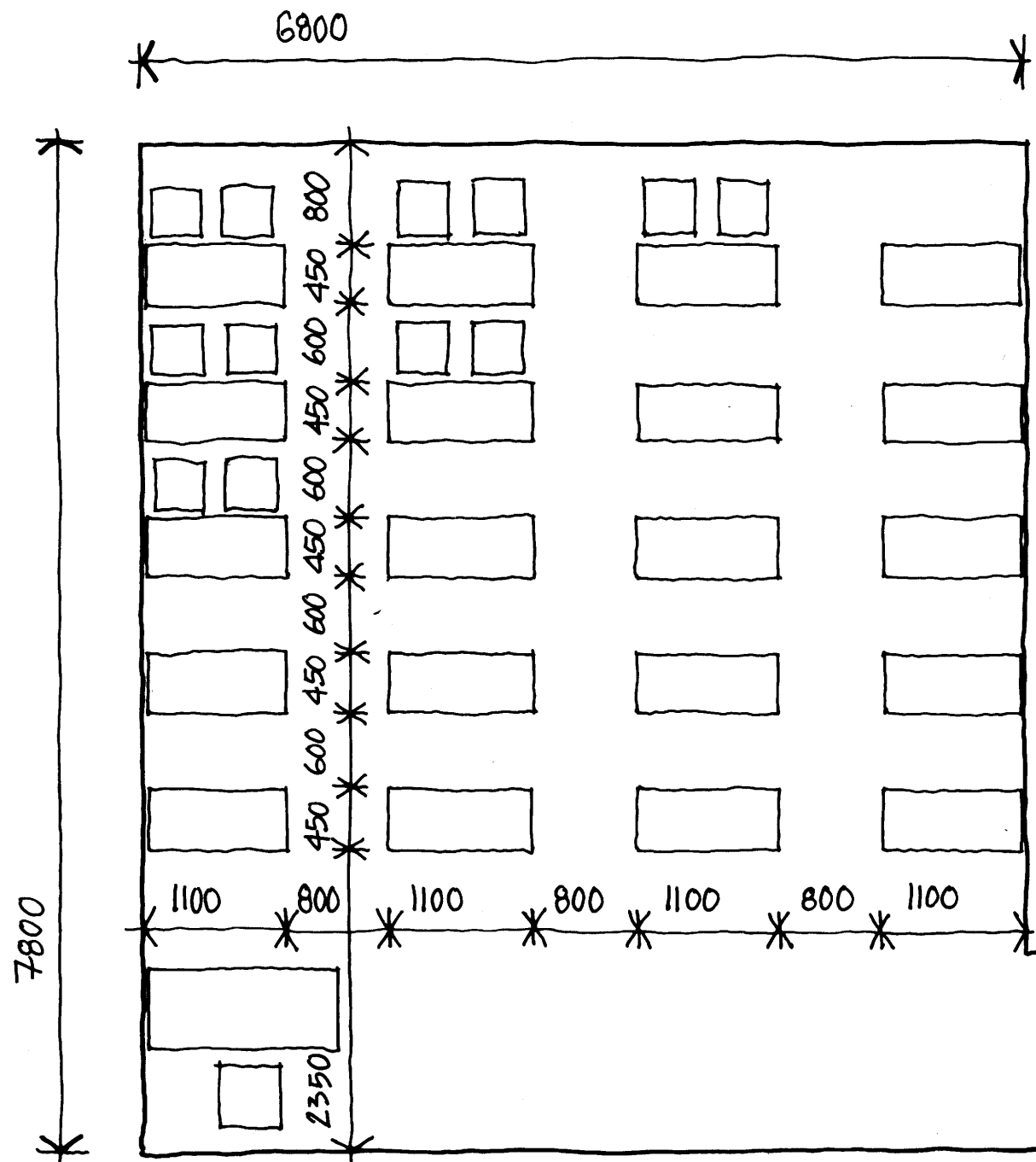
6-CLASSROOM JUNIOR SECONDARY SCHOOLS - 1 TOILET UNIT

9-CLASSROOM JUNIOR SECONDARY SCHOOLS - 2 TOILET UNITS

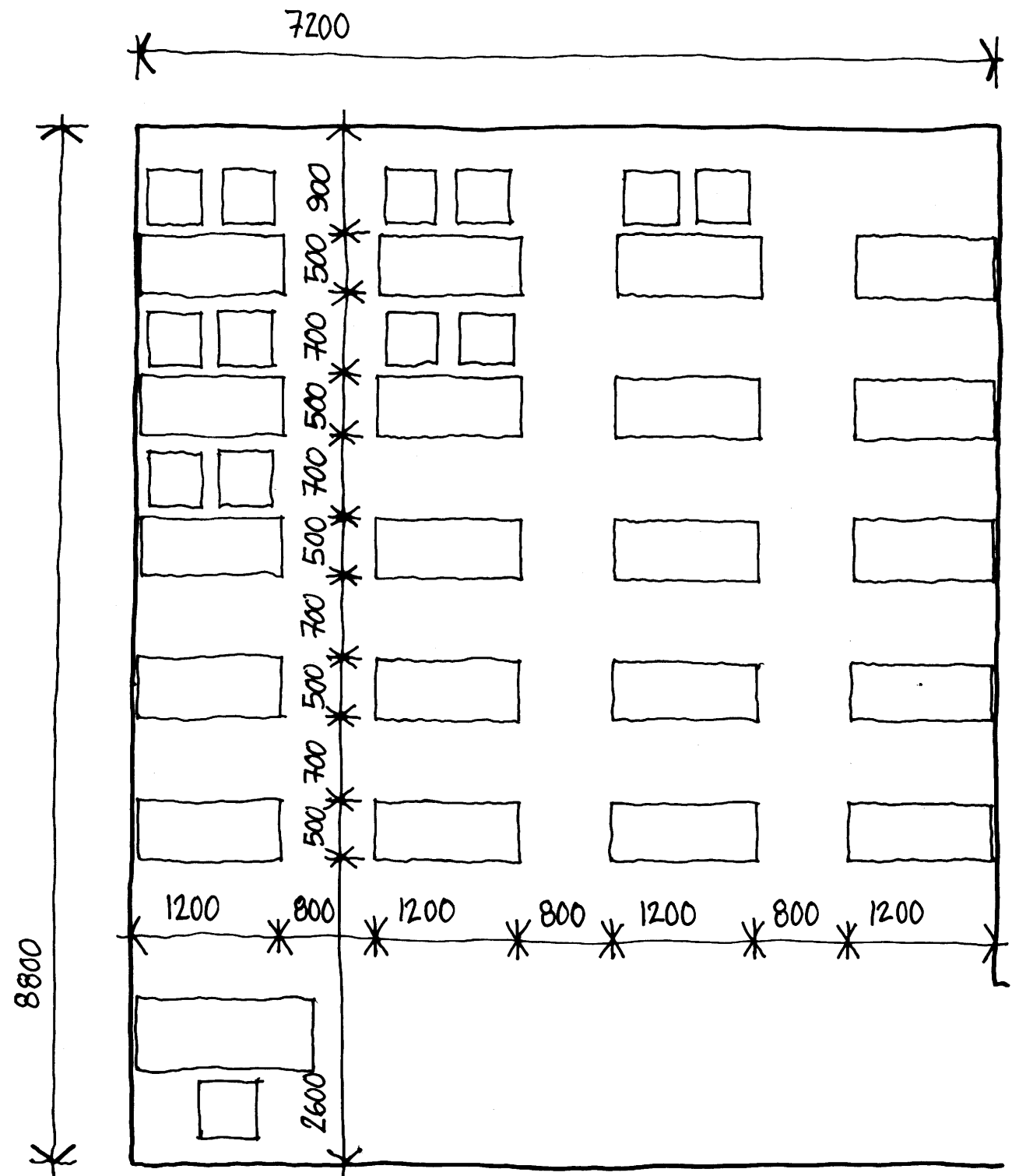
PRIMARY & JUNIOR SECONDARY SCHOOLS

TOILET UNIT

REVISED LAYOUT



PRIMARY SCHOOL CLASSROOM
FURNITURE LAYOUT - 40 PUPILS



JUNIOR SECONDARY SCHOOL CLASSROOM
FURNITURE LAYOUT - 40 PUPILS