



DESIGN REVIEW OF PROPOSED IMPROVEMENTS TO CHERTHALA BOYS HIGH SCHOOL

ABSTRACT

This document details the review by CUE Forum of the proposed design for redevelopment of the Cherthala Boys High School.

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Contents

1	Design Review brief.....	2
2	Findings from Site Visits & Consultation.....	2
3	Assessment of Current Design.....	3
3.1	School Building	3
3.2	School Ground.....	3
4	Recommended Improvements (in current design).....	4
4.1	Adequacy of toilets	4
4.2	Building access for differently-abled.....	5
4.3	Playground facilities.....	5
4.4	Parking Spaces.....	6
4.5	Old Office building in the Centre	6
4.6	Drainage & Sewage.....	7
4.7	Adopt a holistic design/ master plan.....	7
5	Summary.....	9

1 Design Review brief

This document details the review by CUE Forum of the proposed design for redevelopment of the Cherthala Boys High School. The review was done following request by the Office of the Agriculture Minister, Mr. P. Prasad, who is also the MLA representing people of Cherthala constituency. The design which has been reviewed is shown in Appendix A.

The review was done adopting the following steps:

1. Visit to the school premises to understand the as-is situation
2. Consultation with Head Mistresses of both Higher Secondary and High School and the President of PTA
3. Capture the requirements of the school
4. Review the design to assess whether the design complies with the regulatory and practical needs of the school
5. Propose improvements to the existing design
6. Propose an alternative approach to the layout to better match the future requirements of the school

2 Findings from Site Visits & Consultation

Members of CUE Forum consulted with Principals of both High School & Higher Secondary, and also visited the site. The following information was gathered from the school.

Current Student numbers:

- High School – 258 (including 12 girls)
- Higher Secondary – 360 (including 200 girls)
- Lower Primary including nursery – will add closer to 1,000 when relocated to this premises

Current Staff member:

- High School Teaching staff – 14;
- Higher secondary teaching staff- 18
- School Office staff – 8;
- DEO office staff – 25; [to be relocated to LP School premises]
- Food craft institute staff – 5;
- Block resource centre (BRC) staff – 15; [to be relocated to LP School premises]
- AEO office staff – 15; [to be relocated to LP School premises]

Most of the staff uses private transport. Current numbers are:

- Cars – 6 to 10;
- Two wheelers – most of the rest, around 35;

Current modes of commute by school children:

- Around 150 students cycle to school
- Around 25 children get dropped off by private vehicles
- The remaining uses public transport

Drainage & Sewage - Drainage and sewage facilities are big concerns for staff; The current provisions are significantly inadequate; School gets waterlogged in even small rains and sewage facilities are inadequate and extremely unhealthy; Current situation is shown in Appendix B. From staff point of view, school redevelopment **MUST** include provisions for robust drainage and sewage system.

Provisions for napkin disposal – The school is expected to have significant intake of girls in high school in the future; There are currently closer to 200 girls studying (in higher secondary) and most of the staff members are female as well. Staff has requested provision for an Incinerator;

Music & art facilities – The school lacks space in providing an indoor facility to engage students in art & music lessons; Teachers seems keen to have an area for the same while redeveloping the school to be included in the master plan;

Kitchen & Mess – School provides lunch for students until Class XIII; Given that LP students will also get moved to this compound, an appropriately sized facilities are required to be provided in the redevelopment plan;

Other requirements pointed by Principals – Garden, space for bio-diversity park, space for employment-linked education (seems a new initiative)

3 Assessment of Current Design

3.1 School Building

Ground floor	11 class rooms; 1 Kitchen/ dining; 2 staff room; 2 toilets for staff; 2 toilets for girls; 1 for disabled; 1 toilet for boys & 4 urinal for boys;
First floor	10 class rooms; 1 staff room; 1 computer lab; 1 science lab; ; 3 toilets for girls; 1 for disabled; 1 toilet for boys & 4 urinal for boys;
Second floor	4 class rooms; 2 staff rooms; 1 activity room; 2 library/ reading rooms; 1 Counsellor room; 1 Math/ Language lab; 1 Conference hall; 2 toilets for staff; 2 toilets for girls; 1 for disabled; 1 toilet for boys & 4 urinal for boys;
Type of structure	Framed structure
Elevation type	Not known

3.2 School Ground

The school ground has been designed with the following features:

- A 7-side football ground
- Six 100m running tracks
- Badminton courts, Basket ball court & a volley ball court

- 45 car parking spaces, 68 two wheeler parking spaces & 34 bicycle parking spaces are provided.

4 Recommended Improvements (in current design)

4.1 Adequacy of toilets

Considering around 40 children per class with equal representation of boys & girls (in future), the children expected to occupy each floor would be:

- Ground floor - 220 boys & 220 girls
- First floor – 200 boys & 200 girls
- Second floor – 80 girls & 80 boys

Altogether, an estimated 1,000 students are expected to attend classes in that building. Total number of toilets provided in all 3 floors in the current design are:

Floor	Boy Urinals	Boy Toilets	Girl Toilets	Differently abled
Ground floor	4	1	2	1
First floor	4	1	3	1
Second floor	4	1	2	1
Total >>	12	3	7	3

Kerala General Education Department's draft School Manual (May 2022) & KMBR requires the following:

	KEGD Draft Manual (2022)	KMBR
Girls	1 toilet (WC + hand-wash) for every 10 girls	1 WC for 25 girls; 1 wash basin for 40 girls
Boys	1 toilet (WC) for every 25 boys + adequate urinals (most schools follow 1 urinal ≈ 25 boys)	1 WC for 40 boys; 1 Urinal per 50 boys; 1 wash basin per 40 boys

Our recommendation:

Provide adequate toilet facilities on each floor as follows (minimum):

Floor	Boy Urinals	Boy Toilets	Boys Wash basin	Girl Toilets	Girl's wash basin	Differently abled
Ground floor	8	2	5	8	5	1
First floor	8	2	5	8	5	1
Second floor	3	1	2	3	2	1

Total >>	19	5	12	24	12	3
<p>Notes:</p> <ol style="list-style-type: none"> 1. Urinals for boys are recommended to be provided as a separate building since maintenance of the urinals may pose an issue if provided for in each floors; it is likely that provision of Urinals (for boys) may create foul smells on the entire floor if not maintained well 2. All WCs on each floor shall be allocated for girls; Initially some of these can be opened to boys, but eventually has to be restricted to girls as the number of girls' strength increase 						

4.2 Building access for differently-abled

There are staff rooms and classrooms on each floor. One Toilet in each floor has been provided for differently abled which is adequate; But, provisions are not provided for differently abled (both staff and children) to access first and second floors.

Kerala's **Municipality & Panchayat Building Rules 2019** (KMBR/KPBR) treat schools as *Group C – Educational* occupancies, so the general "Provisions for Differently-abled, Elderly and Children" (Rule 42) apply in full. Key dimensional clauses are provided in Appendix C of this note.

Our recommendation:

- The school built-up area exceeds 1,100 sqft; **Provide a LIFT for the differently-abled to access first and second floors**
- Provide ramps to access the Ground floor; Details are in **Appendix C**
- Differently abled toilets are provided, which is good; Ensure its compliance with Manuals
- Provide hard, level surface to walkways to the start of the ramp attached to the buildings
- Draw at least one continuous 1.50 m-wide accessible route from the gate to every teaching block;
- Provide a parking facility near the ramp
- Keep ramp surfaces non-skid; provide hand-rails both sides; fit doors & corridor openings ≥ 0.90 m

4.3 Playground facilities

A 7-side football ground is provided which is reasonable given the land constraints. Basketball and volleyball courts are provided, but stakeholder consultations show that

Cherthala schools have preference for sports football, athletics and similar sports, not specifically basketball and Volley ball.

Our recommendation:

Provide/ design sports facilities keeping in mind that Cherthala Boys High School will become an attraction for those children interested in sports to join the school.

Provide running tracks around the football pitch; The around the ground running tracks can be combined with a 100m running track. See the alternative design in Appendix D.

4.4 Parking Spaces

Schools are for children and all the facilities on the school premises shall be designed keeping children in mind including parking spaces;

In the current design, around 45 car parking spaces and 68 two-wheeler parking spaces are provided, while only 34 bicycle parking spaces are provided. Children shall be encouraged to cycle to school. The current design allocate more than sufficient parking spaces for adults while hardly any space allocated to park children's bicycles.

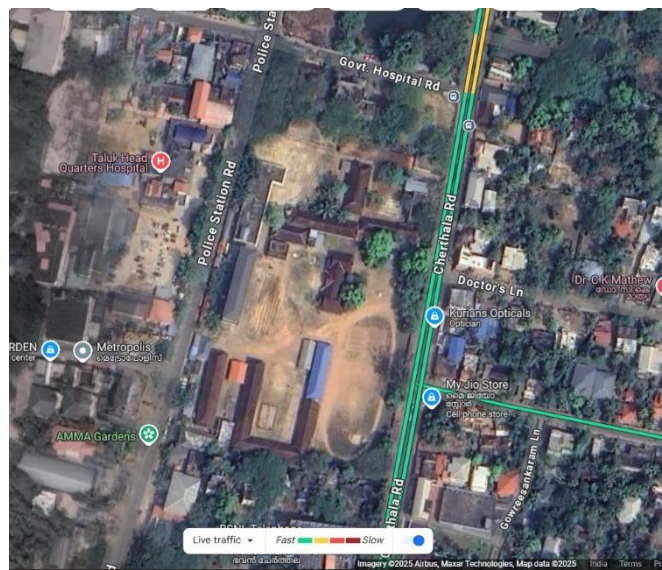
Our recommendation:

- Re-assign the car parking spaces for cars and two wheelers based on actual requirements.
- Allocate/ design 200 to 250 sheltered bicycle parking spaces in the school premises;

4.5 Old Office building in the Centre

It seems the current design ethos has evolved around the old office building in the centre of the campus. The location of this building severely restricts redevelopment of the space available in the campus, particularly for school facilities.

It is also clear the location of that building restricts the designer to develop a football ground with proper running tracks around the ground. While its architectural value is understood, it is important that designer and authorities should consider relocating that building to a more suitable location.



Our recommendation:

- Rebuild and relocate that building further towards South West of the campus **matching Kerala traditional architecture**
- The relocated building shall be designed as a two floor building matching Kerala traditional architecture retaining its original character housing **(i) art & music centre¹ & (ii) space for office or conference, if required.**

4.6 Drainage & Sewage

Drainage and sewage is a big problem in the site. The school doesn't have drainage and the sewage situation is extremely unhealthy for the children and staff. Kerala PCB lists *all* educational buildings discharging **> 5 000 L day⁻¹** under its White/Green category and insists on an on-site Sewage Treatment Plant (STP).

Our recommendation:

- Prepare a drainage layout and a detail design with invert levels showing the discharge points to the outlets;
- Design a Sewage Treatment Plan (STP) & identify the location in the design/master plan
- Construct in phases, but it is important that a drainage layout and design of STP is in place before construction commences

4.7 Adopt a holistic design/ master plan

The approach of current design is doesn't take into account the requirement of the whole campus keeping the future in mind. Cherthala Boys High School has a large campus area. It is extremely important to adopt a holistic design taking all requirements of the campus into consideration and construct in phases, based on the availability of funds.

¹ This was a key requirement flagged by the teaching staff



Our recommendation:

- Prepare a detailed design/ master plan for the entire campus considering the above requirements including relocation of LP School & other offices (DEO, AEO, BRC, etc.) in the campus;
- Relocate and redevelop the old office building to a modern building housing library, art & music centre and conference facilities adopting traditional Kerala architecture retaining the original character of the building;
- Adopt Kerala traditional architecture theme (including paints) for all buildings
- Make space, plan and design adequate sports facilities including football ground, running tracks around the ground, 100m tracks, Badminton courts (Indoor), etc.
- Provide ample spaces (200 to 250) for cycle parking to encourage children to cycle to school
- Take up construction in phases, as and when the funds are available.
- See an alternative layout in Appendix D for consideration.

5 Summary

It is appreciated that current design might have been carried out based on a restrictive brief. Our view the current approach to design and redevelopment of the school haven't taken into account the needs of the entire campus ;

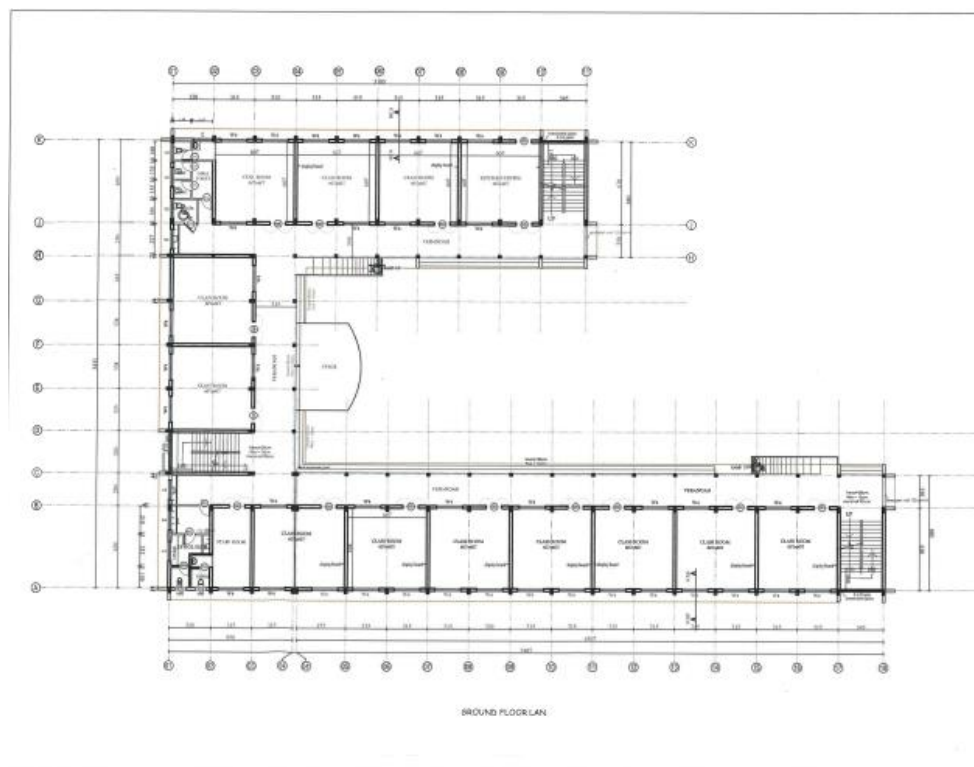
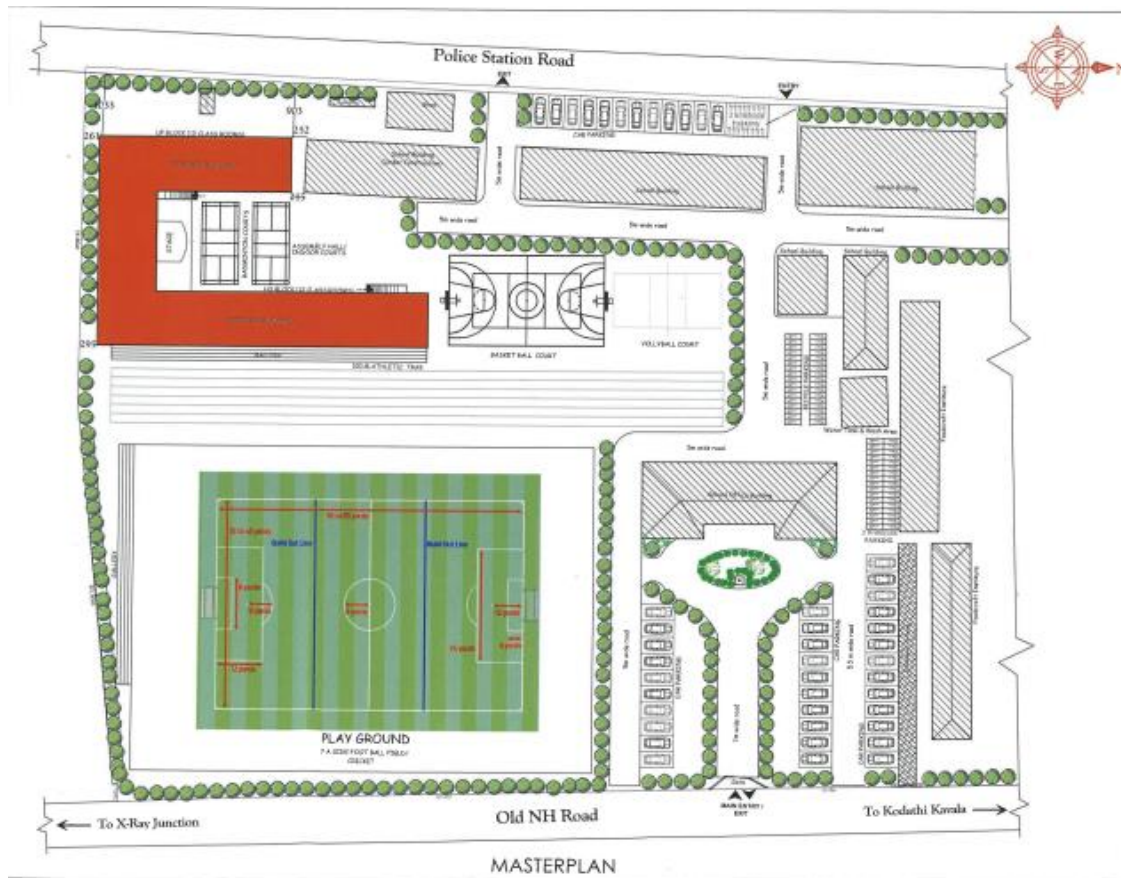
Cherthala Boys High School needs a vision, a master plan with detailed design for the whole campus; This is a school and we must keep the interests of children (ONLY) in mind, while redeveloping the school

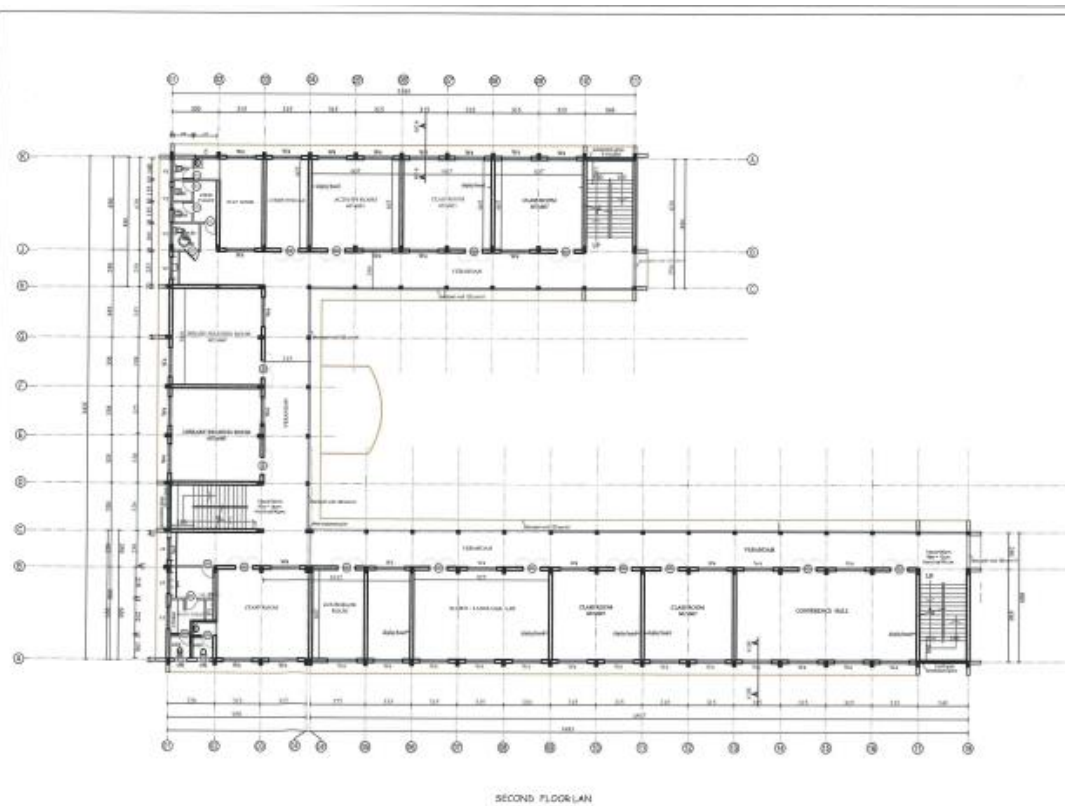
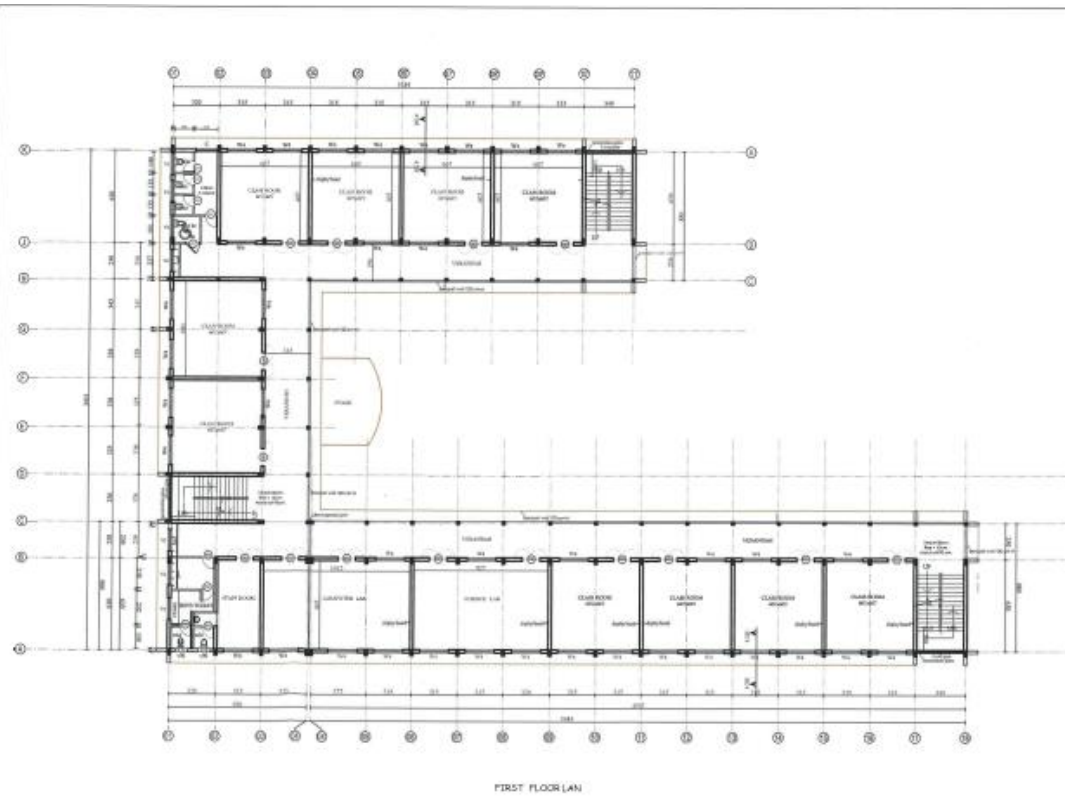
This is a great opportunity to redevelop Cherthala Boys High School to a modern and model school which can attract talent from Cherthala and beyond. We will not be doing justice to our future generations by adopting a short-sighted approach.

Key recommendations are:

1. Number of Toilets are urinals provide are low; Provide as per KMBR and KEGD Draft Manual (2022) [See details in section 4.1]
2. Access for differently abled are inadequate; As required by the Manuals, provide a LIFT for differently enables (both staff and children) to access all floors in the building [See details in section 4.2]
3. There is a high demand for 200m running track around the football pitch. Keeping the constraints in mind, it is recommended to provide a 5 a-side football pitch and 200m running track around the football pitch. This would require relocating the old office building [See section 4.3 & Appendix D for details]
4. Parking spaces for bicycles are low; Currently around 150 student cycle to school, but only around 45 spaces are provided for cyclists; Ideally, a school should encourage children to walk and cycle to school; Increase the cycle parking spaces to 250, reduce the car and two-wheeler parking spaces [See details in section 4.4]
5. Relocate and redevelop the old office building to a modern building housing library, art & music centre and conference facilities adopting traditional Kerala architecture retaining the original character of the building (See Appendix D for layout design)
6. Increase width of roads to minimum 5.5m (ideally 6.6m) for smooth access for utility vehicles – For Engines, Buses (future?), Waste carriers and similar.
7. Adopt a holistic design/ master plan for the entire campus taking into consideration the known future changes, drainage and sewage (See section 4.7 for details)

Appendix A: Proposed design which has been reviewed





Appendix B: Pictures of situation of School after rains



Appendix C Kerala's Municipality & Panchayat Building Rules 2019 for differently abled, Elderly & Children

Feature	Mandatory specification
Accessible route to the main door	Ramp of $\leq 1 : 12$ gradient, ≥ 1.20 m wide; non-slip finish; double hand-rails at 0.80 m height; landing 1.20 m \times 1.50 m at the door. buildingpermit.lsgkerala.gov.in
Vertical access	If the school's built-up area exceeds $1\ 000\text{ m}^2$, either a lift compliant with min. car size 1.10 m \times 2.00 m (door 0.90 m) or a ramp to every floor. buildingpermit.lsgkerala.gov.in
Barrier-free toilets	At least one special WC on the ground floor (and on every third floor thereafter). Inside clear size ≥ 1.50 m \times 1.75 m; door 0.90 m (out-swing/slide); WC seat height 0.50 m; grab-bars; emergency-release lock; one basin per floor with 0.70 m knee-clearance. buildingpermit.lsgkerala.gov.in
Reserved parking	3 % of required car bays (min 1) within 30 m of entrance; bay width ≥ 3.60 m. buildingpermit.lsgkerala.gov.in
Walkways & thresholds	Hard, level surface; no gratings > 12 mm; route must not cross vehicular traffic; all door openings used by students ≥ 0.90 m wide and step-free. buildingpermit.lsgkerala.gov.in
General safety / signage	No projections below 2.10 m; clear, high-contrast signs and symbols at decision points. buildingpermit.lsgkerala.gov.in

Education-department norms that **add to** the building rules are give below.

Document / programme	Extra expectations for schools	Why it matters
Samagra Shiksha Kerala – Inclusive Education cell	"Barrier-free environment for access to classrooms, laboratories, libraries, play areas and toilets" and provision of Braille, large-print, hearing and mobility aids.	These conditions are checked during annual UDISE+ data collection and to release central grants.
General Education Department 'School Manual' (draft 2022)	One wheelchair-friendly classroom per floor; tactile signage; height-adjustable drinking-water points; timetable flexibility for therapy sessions. (Referenced in inspection check-lists used by AEOs/DEOs.)	

Document / programme	Extra expectations for schools	Why it matters
Rights of Persons with Disabilities Act 2016 & central Harmonised Guidelines 2022	All existing government-aided schools were to be retro-fitted by 15 June 2022 ; new schools must be fully compliant from day one	

Appendix D: An alternative layout

