

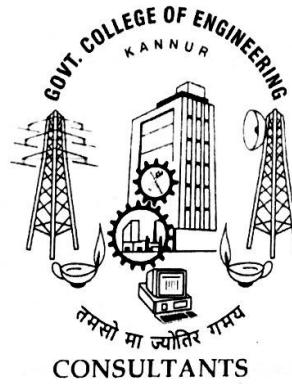
STRUCTURAL STABILITY REPORT
Marygiri English Medium School Building

(CCE/C/173/2020-21)

CLIENT

The Manager

Marygiri English Medium School, Sreekandapuram



Dr. Deepu S P

(Assistant Professor)

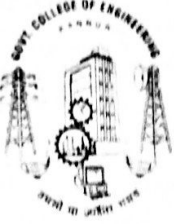
Prof. Manu P Raj

(Assistant Professor)

DEPARTMENT OF CIVIL ENGINEERING
GOVT. COLLEGE OF ENGINEERING KANNUR

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July 2021



DEPARTMENT OF CIVIL ENGINEERING GOVERNMENT COLLEGE OF ENGINEERING

STRUCTURAL STABILITY CERTIFICATE

(Marygiri English Medium School Building)

Sub: Marygiri English Medium School Building-Inspection and issuing stability certificate -regarding.

Ref: - - 1. Letter No. NIL, dated 10/02/2020 from the Manager, Marygiri English Medium School, Sreekandapuram to the Principal, Govt. College of Engineering Kannur :
2. UO Note no. CCE/C/173/2020-21 dated 15-02-2021

Vide Ref 1, Manager, Marygiri English Medium School, has requested to inspect, and issue Structural stability certificate of their Marygiri English Medium School, Kootumugham Building (Building No 4 & 5 Ward No XIV, Sreekandapuram Municipality, Sreekandapuram Village, Taliparamba Taluk, District: Kannur). Accordingly, **Dr. Deepu S. P.**, Assistant Professor in Civil Engineering and **Prof. Manu P Raj**, Assistant Professor in Civil Engineering (hereafter referred as Consultants), Government College of Engineering Kannur (GCEK) were assigned as consultants through Centre for Continuing Education, GCE Kannur.

The following documents were provided for our inspection:

- 1) Structural Plans prepared by Engineer Anoop Krishnan K M .M.Tech in Structural Engineering, Reg No. E/2050/08/15920/KKD/934/2019/EA.
- 2) Soil certificate certified by Anoop Krishnan K M .M.Tech in Structural Engineering, Reg No. E/2050/08/15920/KKD/934/2019/EA.
- 3) Ownership Certificates No. 3128401/365/2021 and 3128401/363/2021 dated 17/03/2021 for Building numbers 4/14 and 5/14

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All the drawings were countersigned by Manager, Marygiri English Medium School, Kootumugham, Sreekanthapuram, Kannur

The existing school building is a G+3 concrete framed structure. Isolated footings were adopted for columns. The foundation depth is 1.25 m from Natural Ground Level (NGL). The soil type is laterite. The bearing capacity as per soil report is 200 kN/m². No settlement was visible in the columns and walls. Plinth beams of size 220 mm × 400 mm are provided. The floor beams of size 220 mm × 500 mm, 220 mm × 600 mm, and 220 mm × 420 mm are provided. Rectangular columns of size 220 mm × 450 mm, 220 mm × 500 mm, circular columns of 220 mm diameter are provided. The construction was completed in four stages during 1996 to 2007.

Table 1 : Area details		
Sl No	Area Details	Built-up Area (m ²)
1	Ground Floor	781.82
2	First Floor	1098.77
3	Second Floor	1168.16
3	Third Floor	1153.96
4	Terrace Floor	22.36
	Total	4225.07

DETAILED SITE OBSERVATIONS

The consultants visited the site on 19th April 2021 and following observations were made during the site visit

- 1) Minor structural cracks were visible in the infill walls.
- 2) Water stagnation was noticed in the terrace. Water leakage was seen in the building.
- 3) Reinforcements from the beams and slabs were found to be exposed and corroding.
- 4) Directed to rectify the errors in the structural drawings submitted.
- 5) The foundation details were deviating from what is shown in the structural drawings, especially the depth of foundation, width of foundation.
- 6) The columns, beams and slabs are having a compressive strength of 15 MPa obtained via NDI Rebound hammer test.
- 7) The regular maintenance was not seen. Steel works were found to be rusting.

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RECOMMENDATIONS

- 1) The steel reinforcement protruding out of the columns, slabs and beams needs to be suitably cut and treated with anti-corrosive coatings and plastered ensuring proper cover.
- 2) Repair of cracks in walls and floors in all the floors
- 3) Extensive water ponding is noticed in the open terrace especially on the right side of the building. Leak was seen in the building. Adequate water proofing should be done with adequate slope for water drainage. Install sufficient numbers of drainage pipes with proper diameter. The algal growth should be scrapped and cleaned off from the roof. All the floor-parapet joint should be given angle fillets (corner rounding) with water proofing compound so that water won't pond there and ingress into the structure. Provide adequate drainage system for rainwater
- 4) Painting has to be carried out for the full building and grill works.
- 5) In future, regular preventive maintenance works in the form of painting shall be carried out annually to protect the steel works and other non-steel surfaces.
- 6) Architectural and structural drawings should match with the actual site conditions. Rectify all the errors in the drawings. A few sample corrections are made in the drawings provided to the consultants. This is applicable for foundations, columns, beams, classroom sizes, verandah width etc.
- 7) Soil certificate should include depth of foundation, type of soil type of foundation & safe bearing capacity of soil.
- 8) Head box of the shutters in the ground floor were rusted and should be removed.
- 9) Ceilings of classrooms and were seen unplastered in some of the classrooms. There was extensive honey combing too in those ceilings. All unplastered ceilings have to be plastered.
- 10) Stair case details missing in the drawings. Mark all the stair case details.
- 11) Structural and sectional details of retaining walls were missing in the drawings.
- 12) Structural drawings of truss work not submitted.
- 13) In the plan and column layout mark the year of construction of the respective blocks.
- 14) In the plans of all the floors, the left most corner wall is part of adjacent building and not a part of the building under consideration. Hence give proper markings there to demarcate the boundary.

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12/07/2021

- 15) The floors of the buildings are situated at different levels and in the drawings those are to be marked properly.
- 16) In the first floor, there is a handrail for a narrow passage. It has to be fixed properly that it is safe and no lateral movement is allowed.
- 17) Take sections and draw with all details wherever level differences are present.
- 18) In the third floor on the right side (when viewed from the front), there is a sunshade which is under critical condition. Spalling of concrete has began and it is dangerous to keep it there as concrete pieces can fall down and can hurt the people. So it has to be removed and plastered properly after cutting the rebars. Give proper cover for the rebars during re-plastering.
- 19) Few places there are cracks near the windows, walls etc. It has to be chipped and plastered and painted. After plastering proper curing has to be done to prevent further cracking.
- 20) The school building is constructed in stages and proper expansion joints have been provided at the junctions of two building. The joints have to be filled up properly with appropriate filler materials and there should not be any cracks developing at these areas to prevent water leakage.

The consultants revisited the site on 07/07/2021 for checking the progress of remedial works and found satisfied with the works already performed and those are in progress.

CONCLUSIONS

Based on the visual examination and the nondestructive testing conducted by the Consultants, it is concluded that the existing building of Marygiri English Medium School, Kootumugham (Building No 4 & 5 Ward No XIV, Sreekandapuram Municipality, Sreekandapuram Village, Taliparamba Taluk, District: Kannur) at present is in a stable condition with no severe damages. The identified defects as mentioned under Recommendations were repaired by the Client. In future, it is recommended to carry out proper maintenance works at regular intervals. Structural Stability certificate shall be obtained once in a year from approved Government agency/Engineering College without fail.

Therefore, it is certified that based on visual inspection and non-destructive test results, the building of Marygiri English Medium School, Kootumugham Building (Building No 4 & 5 Ward No XIV, Sreekandapuram Municipality, Sreekandapuram Village, Taliparamba Taluk, District: Kannur) is found to be fit and structurally stable for

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conducting classes under gravity loads within normal wind and weather conditions. The certificate is valid for one year from date of issue. The condition of the building needs to be reviewed every year in future. (Note: The drawings authorized by the Manager of the aforesaid school and the Structural Engineer were taken as reference for structural calculations. Design checks were limited to the data available from the drawings provided. It is stated that we are not responsible for any alterations or modifications, if at all any, carried out by the owner in future so as to affect the structural stability of the building)

10/07/2021

GCE Kannur

Manu P. Raj
12/07/2021

Prof. Manu P. Raj
Assistant Professor
Department of Civil Engineering,
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Dr. Deepu S.P.
12-7-21

Dr. Deepu S. P.
Assistant Professor
Department of Civil Engineering,
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Dr. Deepu S.P.
12-7-21

Counter signed
for Head of the Dept. (Civil Engg.)
Govt. College of Engg., Kannur

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Principal

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