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## Remodeling of Aluva bus terminal

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### ABSTRACT

*The study consists of two parts. The first part was devoted to the preparation of new plan for the Aluva bus terminal and second part consists of 3D modeling of the building. The proposed site is at Aluva. It consists of G+ 3 storey building. The typical plan of the building is given below. The building is planned according to the requirements of the users by conducting a questionnaire survey. Visits to various construction sites were conducted. This site visits helped to be aware of the latest construction methods that are adopted and being practiced in construction industry.*

**Keywords:** 3D modeling, Revit drawing, AutoCAD drawing, Sectional view, Perspective view

### 1. INTRODUCTION

Aluva is a municipality and a northern suburb, in Kerala, India. Aluva is the second biggest town in ernakulam district after Kochi city. Situated around 15 km from the city center on the banks of river Periyar, Aluva is one of the major industrial centres of the state. A major transportation hub, with easy access to all major forms of transportation, Aluva acts as a corridor which links the highland districts to the rest of the state. Aluva is accessible through rail, air and metro. Aluva, home to the summer residency of the Travancore royal family—the Alwaye Palace is also famous for the Sivarathri festival celebrated annually at the sandbanks of Periyar. Today, whilst part of the Kochi urban agglomeration, Aluva is an autonomous municipality. its civic administration conducted by Aluva Municipal Council. The town also serves as the administrative centre of the Aluva taluk. It is the starting point of Kochi metro rail, which began its operations in June 2017.

A bus stand, also called a bus bay, or bus stance, is a designated parking location where a bus or coach waits out of service between scheduled public transport services. 'Bus stand' is also often an alternative name for specific bus stops inside a bus station. A bus stand are seen at different busy spots. Like school or college gates, markets, medical centers and the crossing point of two or more roads. A bus stand is usually employed to allow a bus to lay over at a bus terminus, without giving the appearance of being in service, or blocking the stop from use by other buses that are in service. Bus stands also allow short- term parking for driver changes or driver breaks.

Aluva KSRTC bus stand is one of the most crowded bus stands in Ernakulam district. KSRTC bus station at Aluva, is a prominent transport hub in Kerala. It is exclusively used for only KSRTC bus services. Bus services from major parts of Kerala point in and out from the Aluva KSRTC bus stand. Even though the bus stand is having great importance, the state of bus stand is in a pathetic situation in the present scenario. Hence, the remodeling of Aluva bus stand acquires great importance. The remodeling of bus stand is done using Revit Architecture software.

### 2. SCOPE OF STUDY

- Efficient movement of buses in the bus stand.
- Implementation of new facilities in the bus stand.

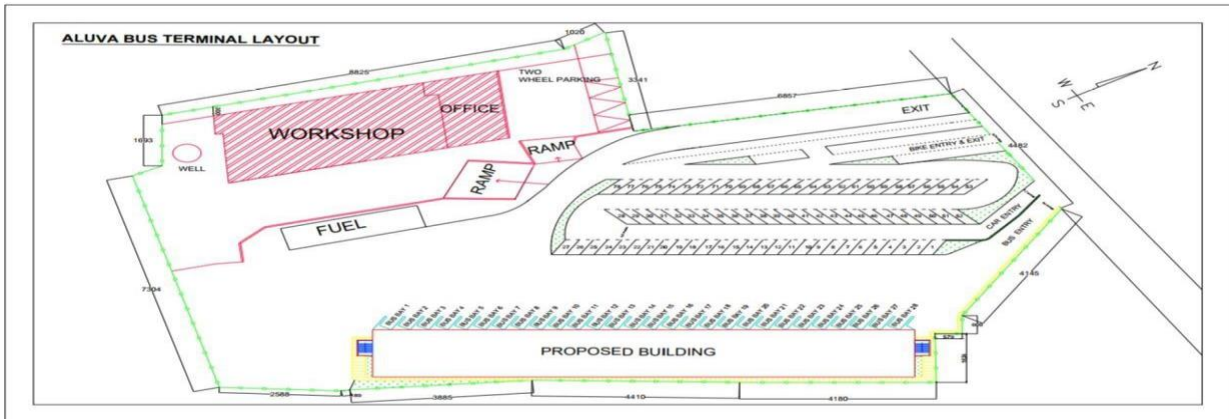
- To ensure the passenger safety.

**3. OBJECTIVES**

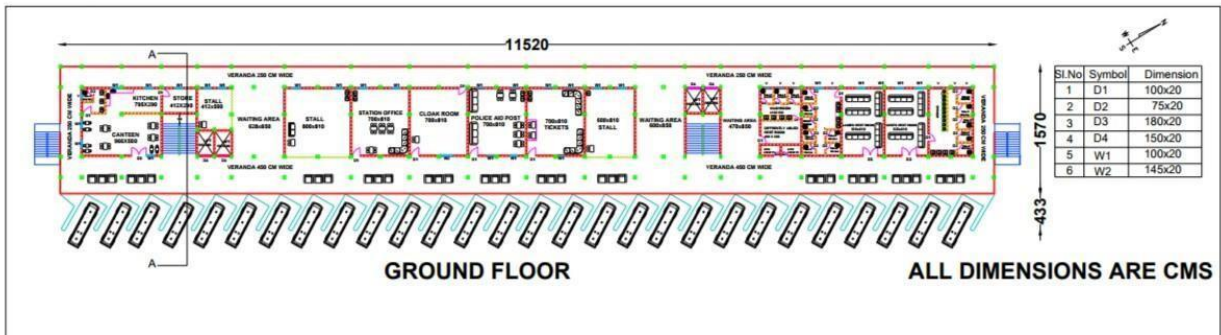
- The main objective of this project is to remodel the bus stand to ensure convenient utilization of the bus stand.
- To use Revit architecture software for remodelling of bus stand.
- To implement new facilities like underground parking, shopping complex etc.
- To use the collaboration tools offered by REVIT thus making the overall construction easy.

**4. PREPARATION OF NEW PLAN FOR BUS TERMINAL**

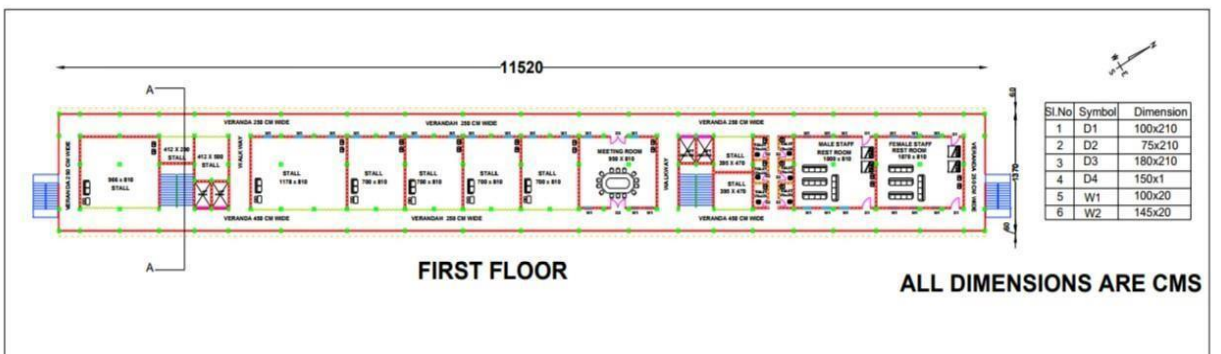
The new plan for Aluva bus terminal is prepared using AutoCAD software. AutoCAD is desktop-based design, drawing, drafting, and modeling software widely used in the architecture, engineering, and construction industries to create building plans, service and design schematics, and other layouts that can be represented in both 2D and 3D. The proposed building is Three storeyed. The new plan is given below. The layout consists of the proposed building, Bus bays in which 28 buses can be accommodated, a wide car parking area, KSRTC Office, Workshop, Two wheeler parking, fuel station etc. The proposed building is G+ 3 storeyed. Ground floor consists of stalls, Ticket counter, large waiting area, urinals, differently abled rest room, ladies rest room, a station office, cloak room, police aid post etc. The first floor comprises of stalls, male staff rest room, female staff rest room, meeting room, toilets etc. Second floor is having different stores and stalls, washrooms and a fitness centre. Third floor consists of dormitories, stalls and washrooms etc.



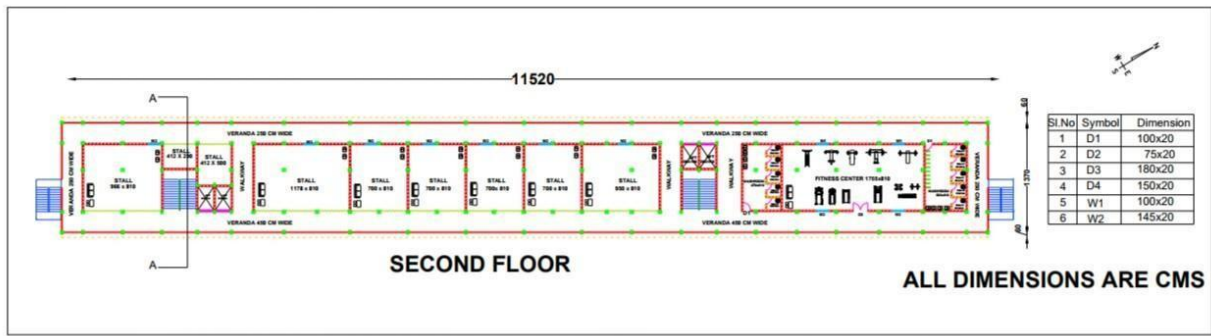
**Fig.1** Layout of the proposed building



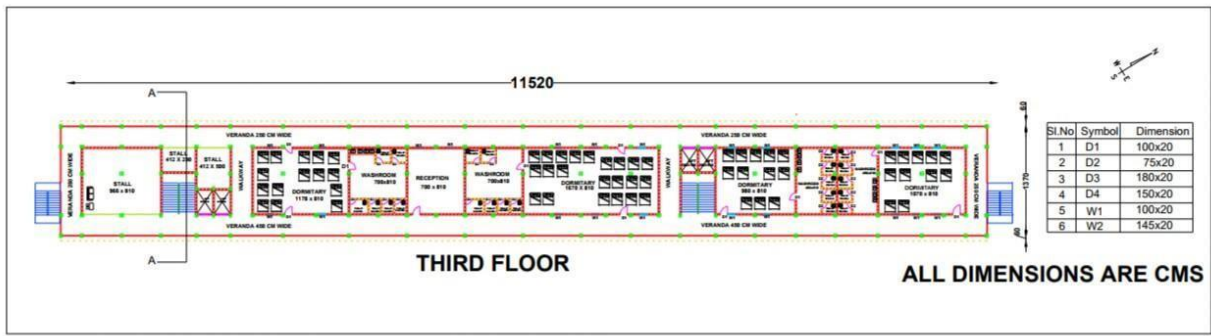
**Fig.2** Ground floor



**Fig.3** First floor



**Fig.4 Second floor**



**Fig.5 Third floor**

### **5. 3D MODELLING OF THE PROPOSED PROJECT**

After finding out the new proposals to be implemented in the project, 3D Modelling of the proposed project is done. The software used in this procedure is Revit Architecture. The Revit work environment allows users to manipulate whole buildings or assemblies or individual 3D shapes. Modelling tools can be used with pre made solid objects or imported geometric models.

When a user makes a building, model, or any other kind of object in Revit, they may use Revit's rendering engine to make a more realistic image of what is otherwise a very diagrammatic model. This is accomplished by either using the premade model, wall, floor, etc or tools making his own models, walls, materials etc. Revit 2015 comes with a plethora of premade materials , each of which can be modified to the user's desires.

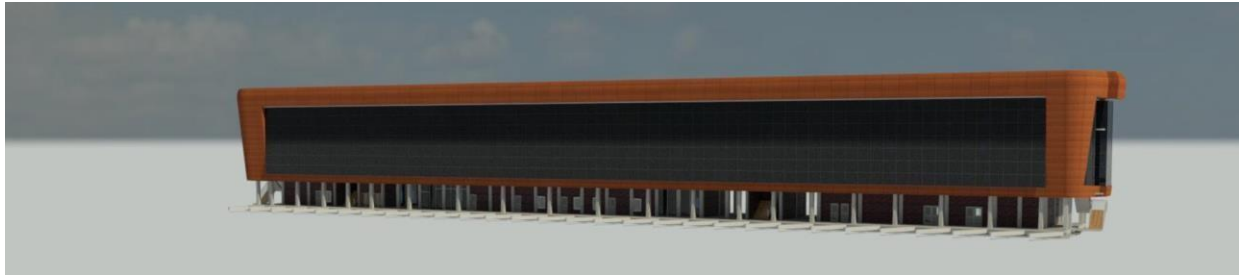
The complete bus terminal in 3D would look like the following image.

### **6. PROCEDURE OF 3D MODELLING**

- Units are set in centimeters.
- Levels are created.
- Then structural drawing is completed. That is, Columns are beams are drawn.
- ACP Sheets are provided.
- Curtain walls are provided inside. These partitions are of 20 centimeters.
- 100\*150 cm windows are provided.
- Two outer staircases and two inner staircases are given.



**Fig.6 3D View 1**



**Fig .7 3D view 2**

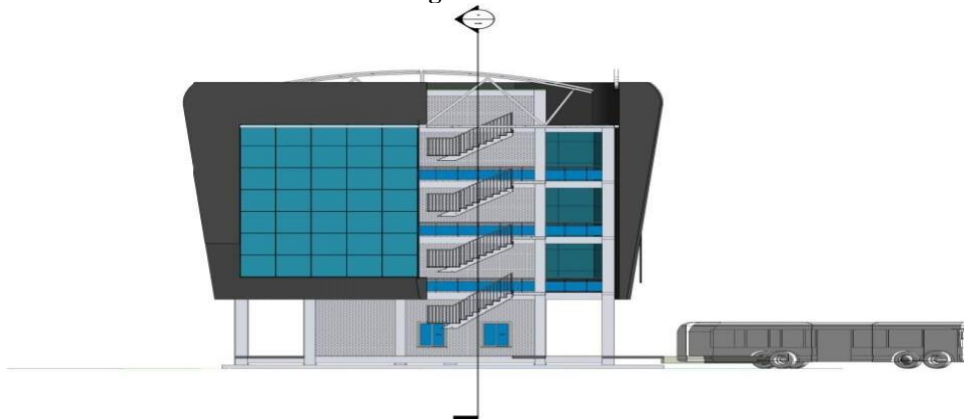


**Fig.8 3D view 3**

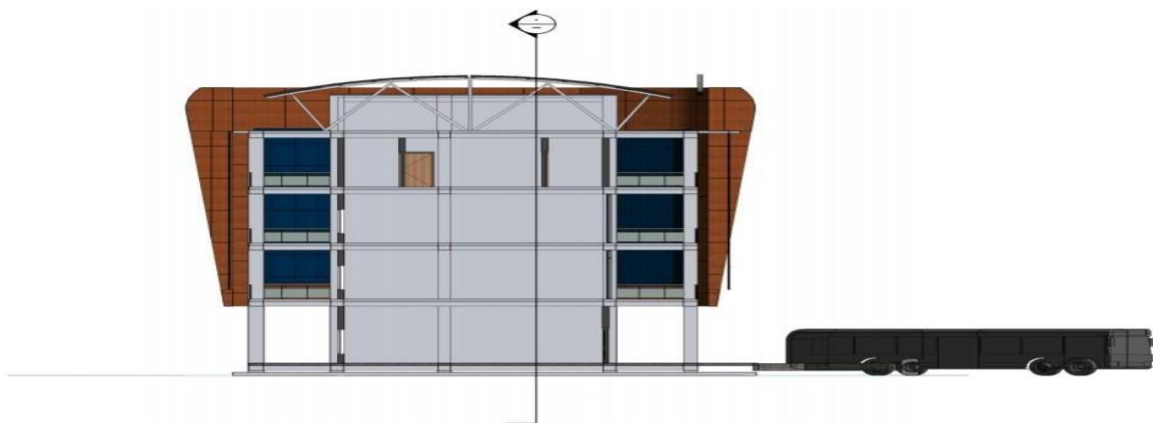
**7. SECTIONAL VIEW**



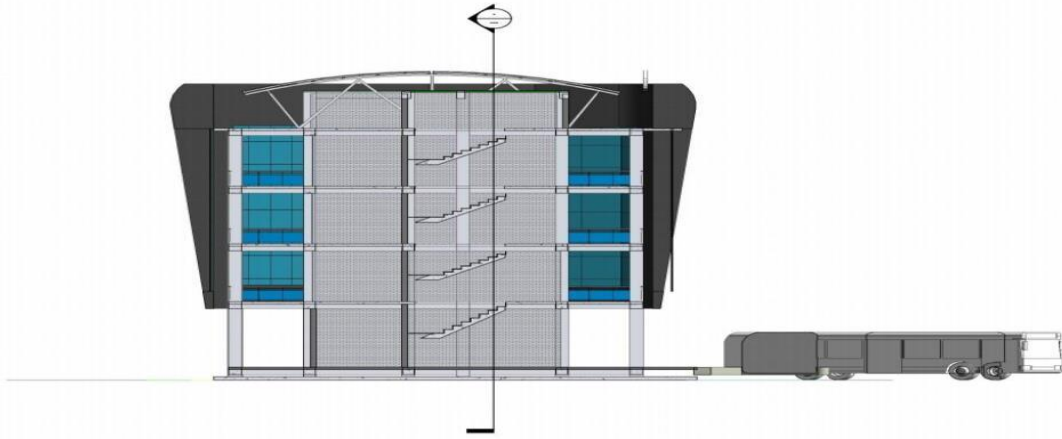
**Fig.9 Section 1**



**Fig.10 section 2**



**Fig .11 section 3**



**Fig .12 Section 4**

**8. ELEVATION**

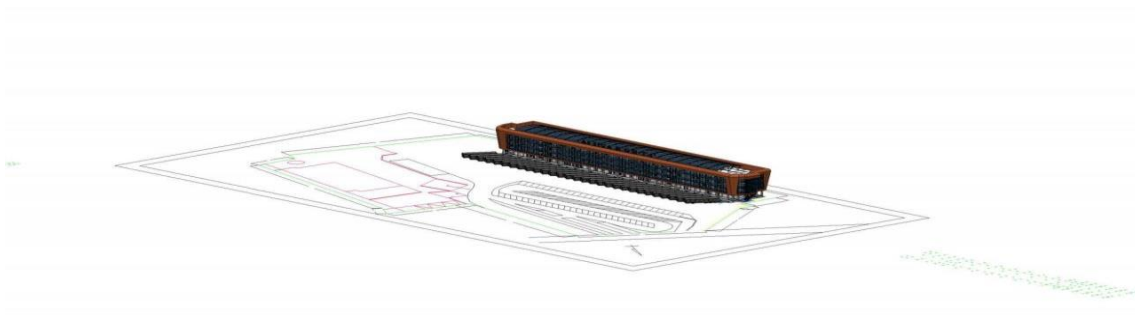


**Fig.13 Side elevation**

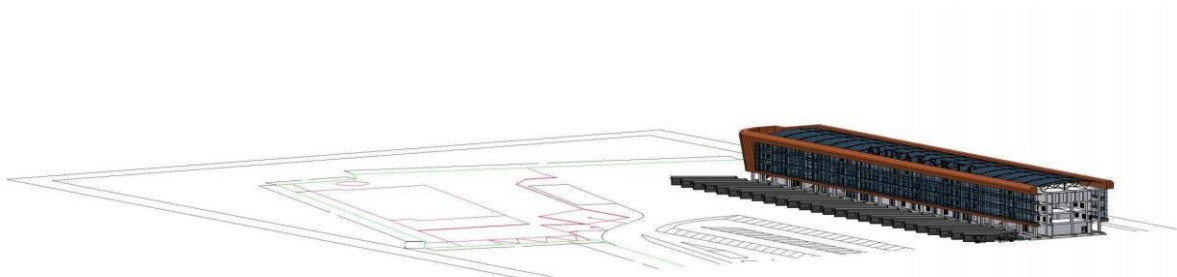


**Fig 14. Elevation**

**9. PERSPECTIVE VIEW**



**Fig.15 Perspective view**



**Fig.16 Perspective section**

## 10. STRUCTURAL DRAWINGS



**Fig.17 Structural view 1**



**Fig. 18 Structural view 2**



**Fig.19 Structural view 3**

## 11. CONCLUSIONS

The conclusion drawn is that the use of modern tools can make the planning and modeling process easy and efficient. The use of softwares reduces a lot of man power and human errors. 3D realistic view enables us to indicate the components placed within the building model more clearly. From the study, It is concluded that

- Most convenient utilization of space is achieved.

- More futuristic building is designed.
- More sustainable building is designed.

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