

MASTER PLAN PROPOSAL AND MOCKUP OF ASHRAMAM MAIDAN

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ABSTRACT : A well-designed open space that encourages outdoor activity and social communication is a community asset that could potentially contribute to the health of local residents and social harmony of the community. Numerous factors may influence the use of each single space and may result in a variety of visitors. To increase the use of community open spaces, landscape designers should focus more on creating user-oriented spaces with facilities that encourage active use than on improving ornamental vegetation and accessories. This project focuses on designing such an open space by allocating dedicated spaces for each events and adding some necessary establishments in the open space. Our project aims for the development of Kollam Ashramam Maidan.

KEYWORDS: AutoCAD software, Sketchup software, Total station, Surveying.

I. INTRODUCTION

Open grounds or open terrains are flat uncovered, and unobstructed from obstructions such as trees or buildings. These may be include farmland, grasslands or even arid regions. In the heart of the city of Kollam, such an open ground exists named Ashramam Maidan. The Ashramam Maidan is a major spot of attraction at the center of the city, large number of visitors are daily reaches the ground for various activities. The Government of Kerala has decided to preserve the Ashramam Maidan in Kollam city as a heritage site. This ground at present rooms for various activities such as cultural fests, Kollam pooram, circus events, and for cricket matches by Kerala Cricket Association, practice ground for driving lessons and also for conducting Driving License Test by the Kollam RTO along with these main events the ground also provides space for civilians for sports, jogging, refreshment etc. the land id under the administration of revenue department governed by the authority of East Village Officer Kollam. Any future development works and other projects on the ground is being decided by the authority of Department of Tourism Development Office Kollam situated near Ashtamudi Lake. Ashramam Maidan was used as an aerodrome during the British Rule. At that time there were no aerodromes either in kingdom of Travancore and Kochi. It was also used for flying training. After the commissioning of Thiruvananthapuram Airport and its development, this aerodrome went to decline. Now the Ashramam Maidan contains two large helipads.

SIGNIFICANCE OF THE WORK

At present the events mentioned above are conducted in an improper way without proper planning or preparation. This causes more chance for accidents as different aged groups of people uses the ground at the same time at the same place. The implementation of such a project work will give a new face to Ashramam Maidan, and can be maintained in a sustainable and hygienic manner. The project involves a proposal for a waste treatment facility which

practically solves the problem of waste disposal here and there at Ashramam Maidan. The project does not focus only on the maintenance of Ashramam Maidan, but also to increase the attention of civilians towards this open ground. This can be achieved through implementing and establishing necessary facilities in and out of the Ashramam Maidan.

SCOPE OF THE WORK

The possibility of developing Ashramam Maidan not only gives a solution for the current issues but it also increases the value of the ground and attracts more people and events to be carried out on the ground. This brings up significant changes to the nearby localities and lifestyle of people. Moreover, such a ground having these functionalities helps in bringing healthy life for the residents of Kollam city. The new appearance of the Ashramam Maidan increases the attraction. The establishment of football and cricket turfs introduces a new revenue and the maintenance and related works for the ground can be raised using these funds making the ground a self-sufficient one.



Figure 1.1. Ashtamam Maidan

II. OBJECTIVES

- To allocate dedicated spaces for the events running on Ashramam Maidan
- Gaining the attraction of public to Ashramam Maidan and providing some necessary establishments
- Proper planning help to have Ashramam Maidan maintained properly in hygienic and sustainable manner
- Providing necessary establishments to the ground such as:
 - o Digital clinic
 - o Open theatre
 - o Waste treatment
 - o Cafeteria
 - o Cricket turf
 - o Football turf

III. SURVEYING

LEICA TOTAL STATION

Leica Geosystems based in eastern Switzerland produces products and systems for surveying and geomatics. Its products employ a variety of technologies including GPS satellite navigation and laser rangefinders to enable users to model existing structures, terrains in computer based systems to high accuracies, often under 1 cm.

Specification of Total Station

Table 3.1. Specification of total station

Weight	5 Kg
Battery Charging Time	2.3 Hours
Temperature Range	-20 Degree C to +50 Degree C
Accuracy	2 mm
IP Rating	IP55

PROCEDURE OF TOTAL STATION SURVEYING

Step 1: Tripod Setup

- Tripod legs should be equally spaced
- Tripod head should be approximately level
- Head should be directly over survey point

Step 2: Mount Instrument on Tripod

- Place Instrument on Tripod
- Secure with centering screw while bracing the instrument with the other hand
- Insert battery in instrument before leveling

Step 3: Focus on Survey Point

- Focus the optical plummet on the survey point

Step 4: Leveling the Instrument

- Adjust the leveling foot screws to center the survey point in the optical plummet reticle
- Center the bubble in the circular level by adjusting the tripod legs

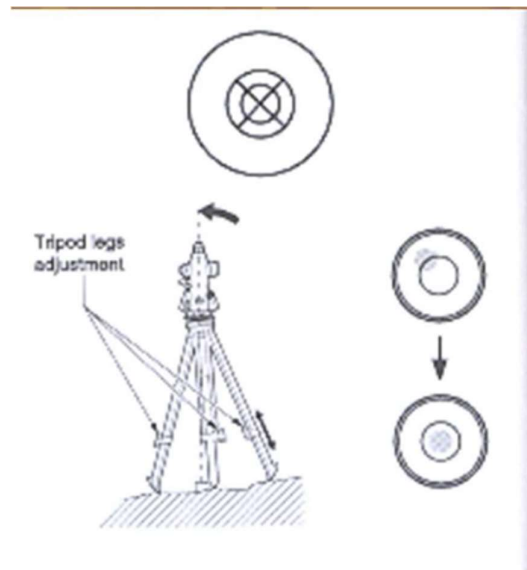


Figure 3.1. Spirit level

- Loosen the horizontal clamp and turn instrument until plate level is parallel to 2 of the leveling foot screws
- Center the bubble using the leveling screws- the bubble moves toward the screw that is turned clockwise
- Rotate the instrument 90 degrees and level using the 3rd leveling screw

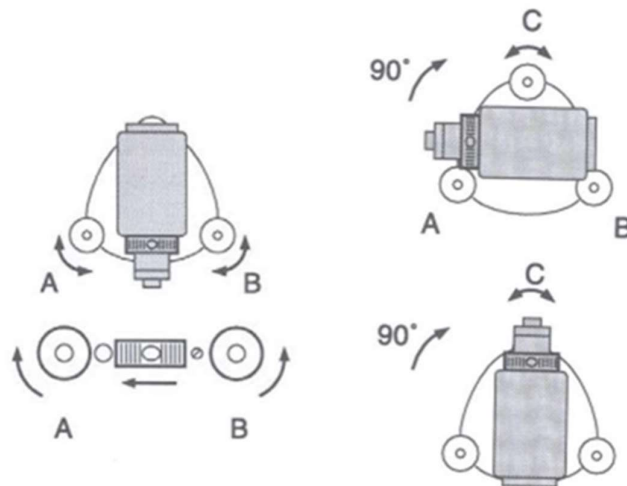


Figure 3.2. Foot screws

Step 5: Electronically Verify Leveling

- Turn on the instrument by pressing and holding the “on” button (you should hear an audible beep)
- The opening screen will be the “MEAS” screen. Select the [Tilt] function
- Adjust the foot level screws to exactly center the electronic “bubble”
- Rotate the instrument 90 degrees and repeat

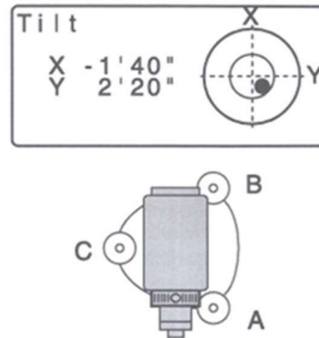


Figure 3.3. Digital level

Step 6:- Calibrating the Instrument

- Calibration must be completed before coordinates can be obtained
- 3 possible calibrations:
 - o Back sight by angle: must know instrument coordinates and have a landmark/target at a known azimuth
 - o Back sight by coordinate: must know instrument coordinates and have mirror target set on a position of known coordinates
 - o Resection (triangulation): must have 3 or more mirror targets established at known 3D coordinates

Step 7:- Setting of 3-D coordinates

- Coordinates may be absolute or relative depending on survey requirements
- Surveying the area of a mining site would require relative coordinates, therefore, the initial instrument X,Y,Z coordinates may be 1000, 1000, 100
- Surveys that have to match a downloaded aerial photo from the USGS would have to match UTM NAD83 coordinates so the starting point would have to be determined by an accurate GPS receiver

Step 8:- Back sight by angle method

- Level the instrument on the desired starting survey marker. Make sure that on the last leveling step the optical plummet is centered on the survey point
- Measure the target height and instrument height
- Select [COORD] from the MEAS menu Select “Stn. Orientation” and then “Stn. Coordinate” Edit the “N0”, “E0”, and “Z0” fields to appropriate values (i.e. northing, easting, elevation of instrument)
- Enter the instrument and target height if necessary Select [OK] when done
- Select “Backsight” and then “Angle” from the menu
- Sight the landmark/target of known azimuth relative to instrument with telescope
- Select “Angle” from menu. Note that the menu displays the zenith angle (ZA) and current horizontal angle (HAR) and is waiting for you to enter the known angle with [EDIT]

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After completing these procedures, the instrument is sighted to the target point and measure button in the total station is clicked, at this instant the instrument capture and feeds information about the sighted point and saves the data. Similarly points which can be sighted from a single station point is measured and captured in the same pattern and the instrument is then shifted to the next point, known as change point. After this shift, the change point is feuded to the instrument and the previous point is back sighted, after this further points are sighted from the change point. The whole procedure is repeated until the whole area is being surveyed. Along with surveying of boundary, other landmark features also captured via instrument, which is later used for clearly developing the plan of Ashramam Maidan.

The survey data is then exported to external USB storage device. It is then processed in Discard software and converted into editable AutoCAD file.

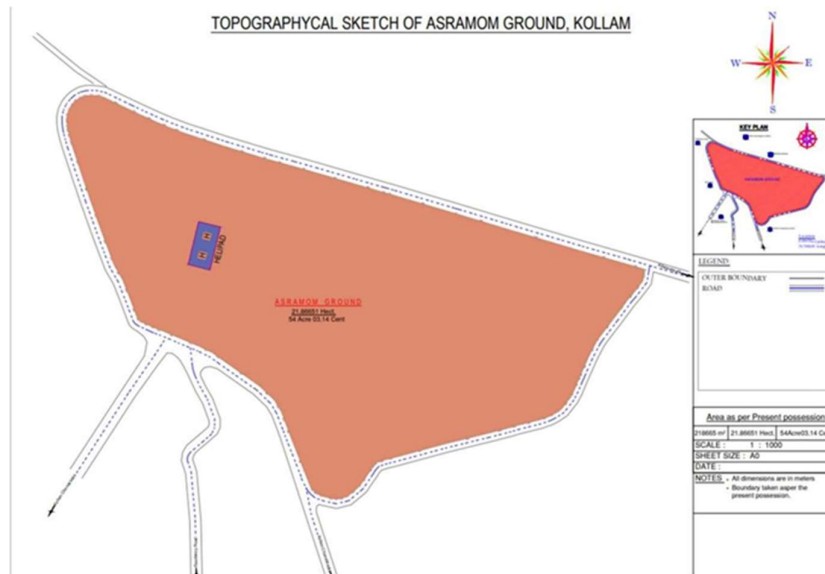


Figure 3.4. Topographic sketch
Survey data

Table 3.2. Survey data

Location	Ashramam Maidan
Latitude	8.894394
Longitude	76.591608
Area	54 Acre 3.14 Cent

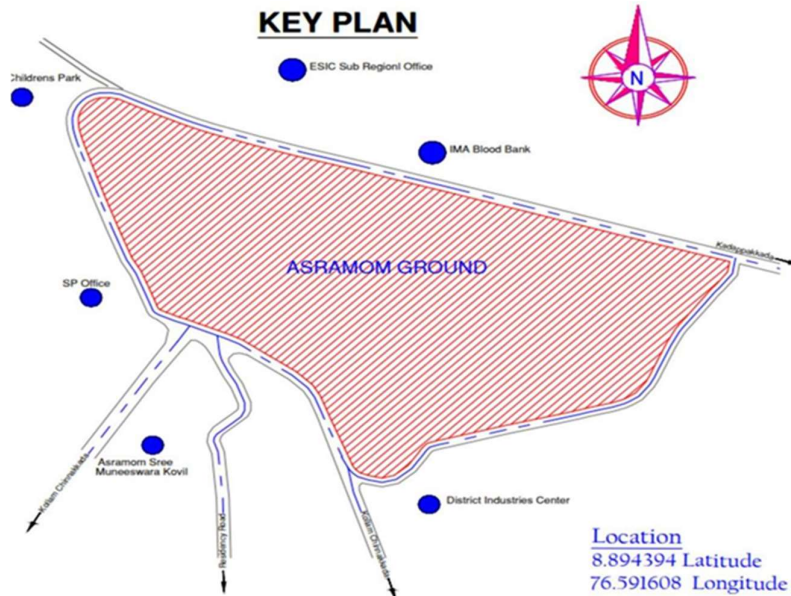


Figure 3.5. Key plan

IV. EXPLICIT ANALYSIS

PREPARATION OF PLAN IN AutoCAD

In order to model the new look of Ashramam Maidan, a 2-D sketch of the same was essential. This made possible using the AutoCAD software.

Procedure of plan preparation

Step 1:- Work area setup

- Set the units for the drawing
- Set origin and limit of the space
- Lock the UCS icon
- Activate zoom all command for the work

Step 2:- Import the file to edit

- Drag the mouse on to the files section
- In the files drawer click 'import'
- Select the required file from the system
- Click OK after selecting
- Wait for the file to get imported

Step 3:- Plan drawing

- In this step, using the tools like line, offset, copy, move, paste etc. the plan has developed with necessary requirements.
- Helipad area and other dedicated spaces are detailed in this plan.

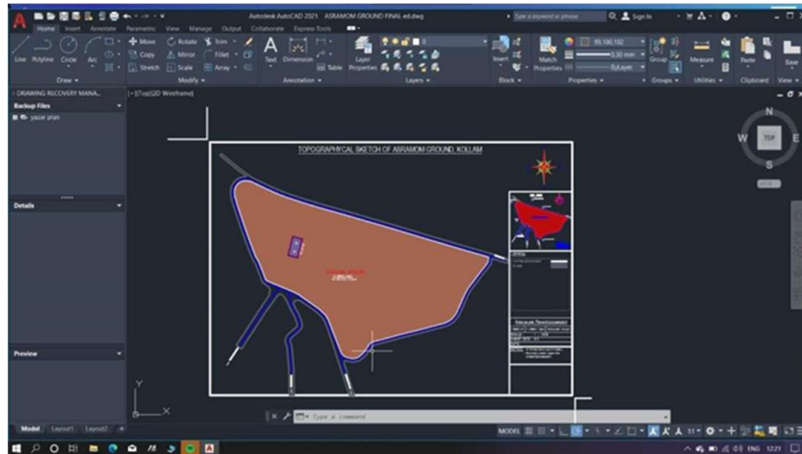


Figure 4.1. CAD developing

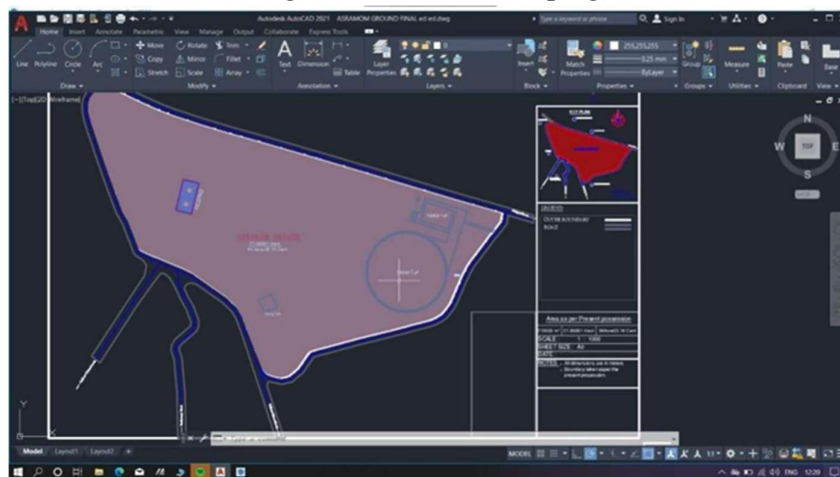


Figure 4.2. CAD drawing

Step 4:- Exporting or saving the file

- After completing the drawing, the drawing saved in .dwg format and saved as a .pdf file The file in .dwg format helps in editing the plan in 3-D software

MODELLING IN SKETCHUP

In order to extend the idea about the new establishments and arrangements at Ashramam Maidan to others, a visualization of the plan was necessary. This 3-D visualization made possible using 2021 version of SketchUp software. The software supports many file formats including .dwg, hence it was very easy to import the cad file into the software for further development.

Procedure of 3-D modelling in Sketch Up

Step 1:- Setting up work space

- When launching the Sketchup software, a home screen asking to choose the template for the 3-D work

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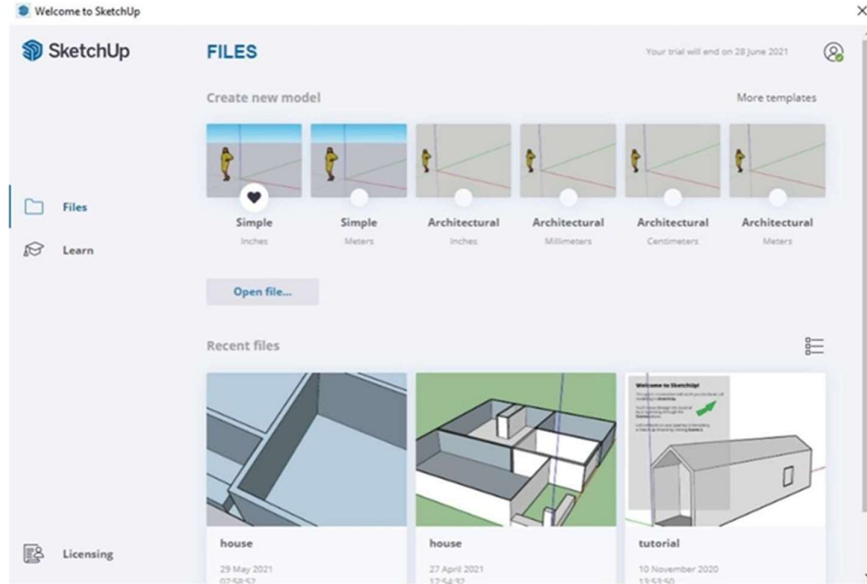


Figure 4.3. template selection

- From this screen select the dimension at which the work is being done, here the modelling is done in meters, hence the template selected was meters for further reference

Step 2:- Importing the cad file

- After starting the template select the cad file to be edited from the file location using the import option from the files section

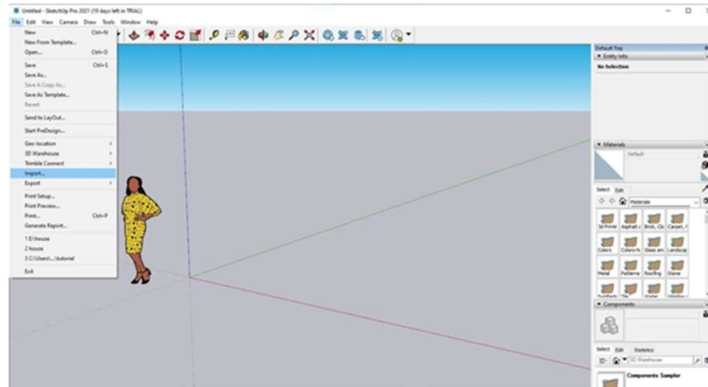


Figure 4.4. Importing CAD file

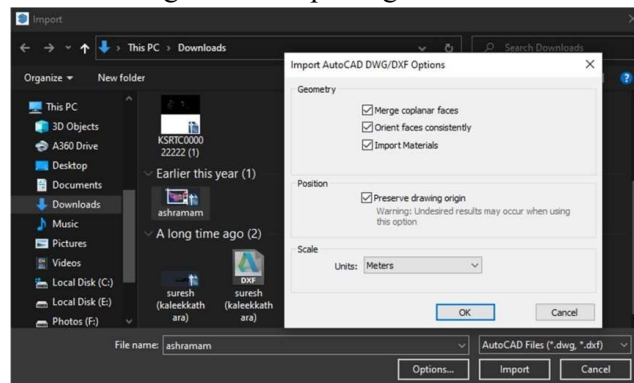


Figure 4.5. Procedure of importing

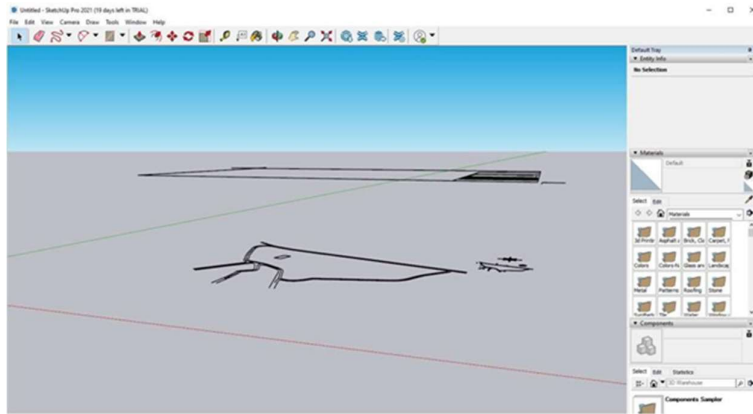


Figure 4.6. Imported file

- During importing, AutoCAD options for the file must be selected such as merging the planes and origin
- After importing start editing the file

Step 3:- Editing the CAD drawing

- Some tools for editing
- Push or Pull tool

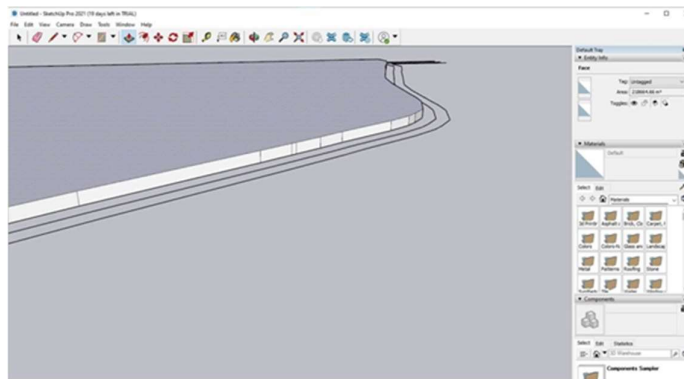


Figure 4.7. Push or pull tool

- Offset tool**

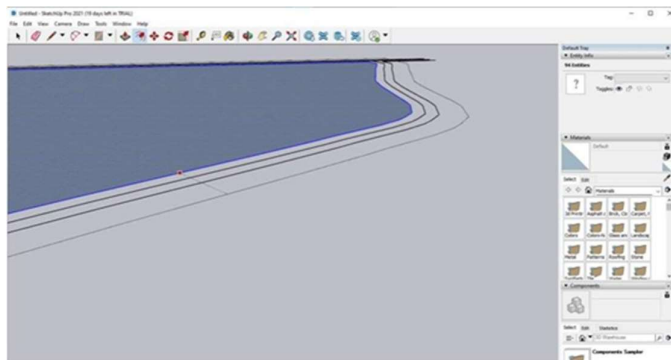


Figure 4.8. offset tool

□ **3-D warehouse**

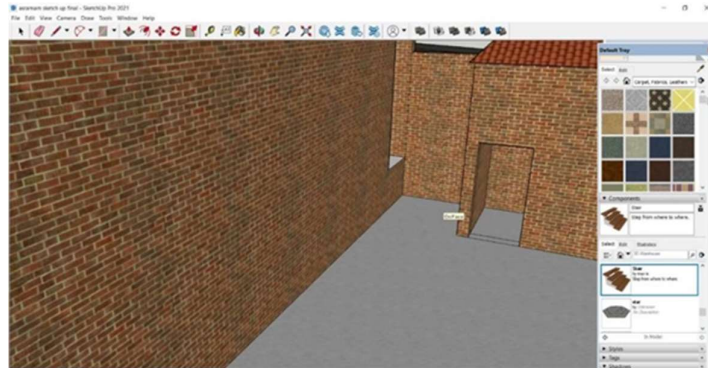


Figure 4.9. 3-D warehouse

□ **Move tool**

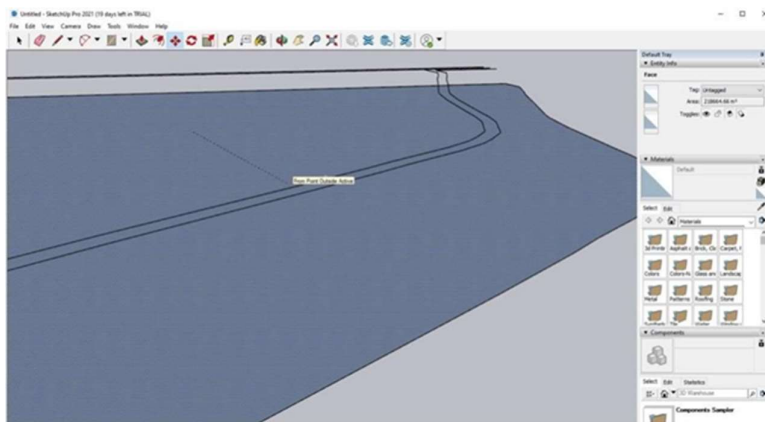


Figure 4.10. Move tool

After the 3-D model created, the developed model is then imported to another rendering software called Lumion Pro.



Figure 4.11. lumion setup



Figure 4.12. lumion rendering

MODEL DETAILS

Cricket Turf and Football Turf



Figure 4.13. Cricket and football turf

Driving test area



Figure 4.14. Driving test

Open theatre



Figure 4.15. open theatre

Digital clinic



Figure 4.16. Digital clinic

Cafeteria



Figure 4.17. Cafeteria

V. CONCLUSION

- A proper systematic survey of Ashramam Maidan has successfully completed

- The Ashramam Maidan is about 54 acre, 3.14 cent of area
- Allocation of area for different purposes has completed eventually which contains sufficient area for its respective activities
- Introduction of waste treatment plant help to maintain the place in hygienic and sustainable manner
- The planning then transferred into a 2-D plan successfully using AutoCAD software
- A model of Ashramam Maidan also developed using 3-D modelling software called Sketchup
- The 3-D model of the ground clearly shows detailed features and establishments added to the Ashramam Maidan
- Thus the beauty and proper utilization of heart of the city is obtained

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