

## UC Irvine

### UC Irvine Previously Published Works

#### Title

Aquatic & Recreation Center Design

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Peer reviewed

## Project Description

This project consists of a recreational and aquatic center that will be located in the city of West Hollywood. The first floor is designated as the parking garage for the structure. The majority of the second floor will serve as an indoor basketball or volleyball court. The following two floors will serve as an area to view the courts and storage space. Lastly, the roof will have two pools; one of which is a junior olympic-sized pool.

## Design Constraints and Parameters

- Minimum ceiling heights for regulation volleyball and basketball courts.
- Minimum swimming pool depths for junior Olympic-sized pools on rooftop.
- Cannot have supporting columns directly below the swimming pools due to court restrictions.

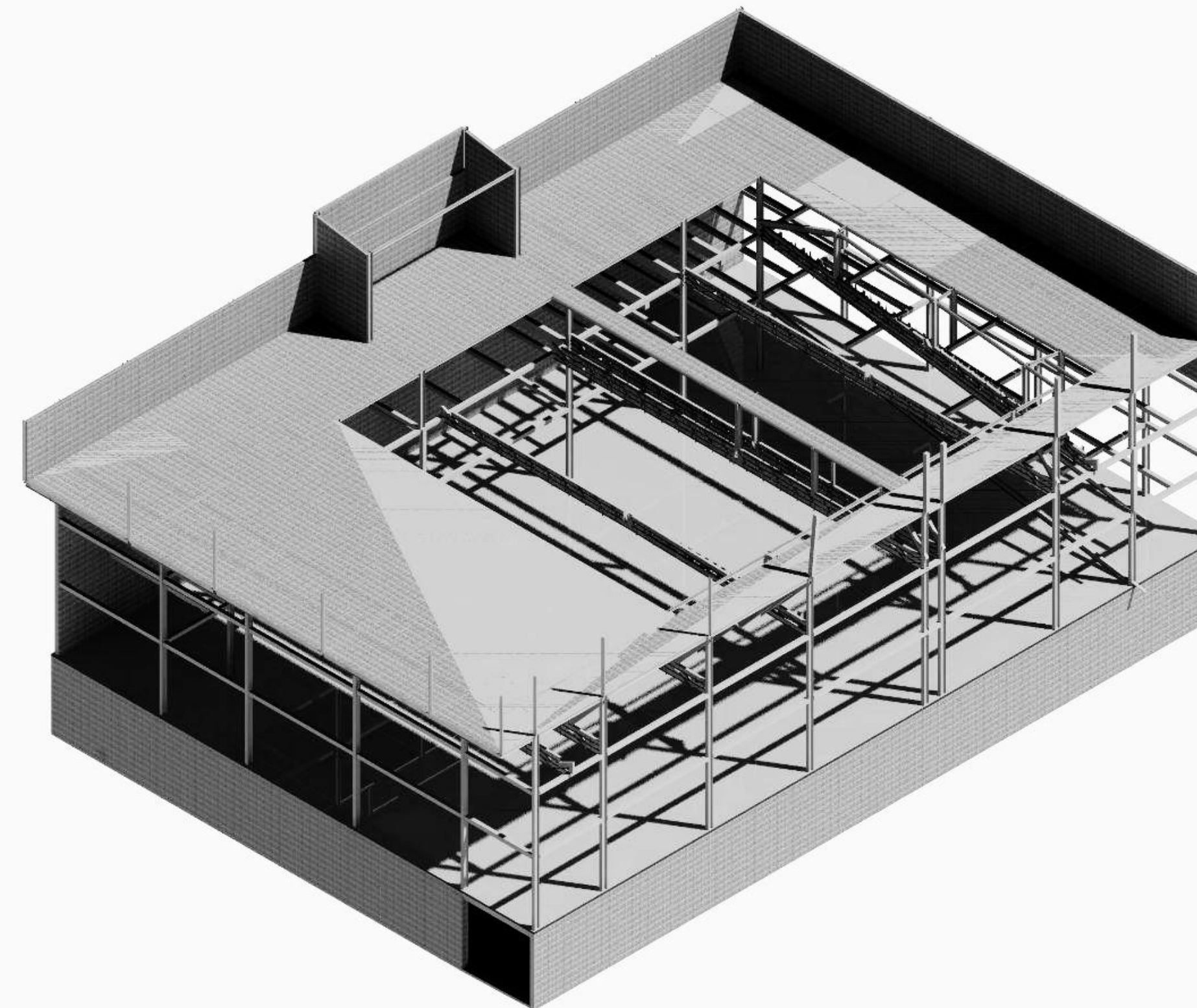


Figure 1: Revit Model Rendering Showing Concrete Pool Deck and Exposed Steel and Concrete Beams & Trusses

## Milestones

1. Completed Preliminary Load Calculation
2. Completed gravity framing layout plan
3. Completed 2nd floor slab design .
4. Completed 1st floor column design
5. Completed 2nd floor concrete beam design
6. Preliminary Truss Design

## Our Next Steps

1. Complete Truss designs
2. Complete Seismic Design
3. Complete Parking Garage Design
4. Complete all column and beam designs
5. Estimate final construction costs
6. Complete Architectural Design
7. Prepare final floor plans

## Figure Descriptions

**Figure 1:** Shows the Revit Model of our structure with the 2nd and 3rd floor concrete beams exposed. On the roof we have a concrete deck with steel beams that distribute the loads of the deck area to the columns. The empty area on the roof is where the two pools are located. There will be trusses located both ways to withstand the loading from the pools. The parking garage entrance is located on the south east corner and the entire structure will be supported with concrete masonry walls spanning the perimeter of the building not shown in the figure above.

**Figure 2:** Shows the Risa Model of our structure with the truss locations and entire framing system. This model shows the design assumptions where we have pinned connections.

**Figure 3:** Shows the trusses separating the written sections show some of our preliminary truss designs. The preliminary truss type chosen is a flat truss.

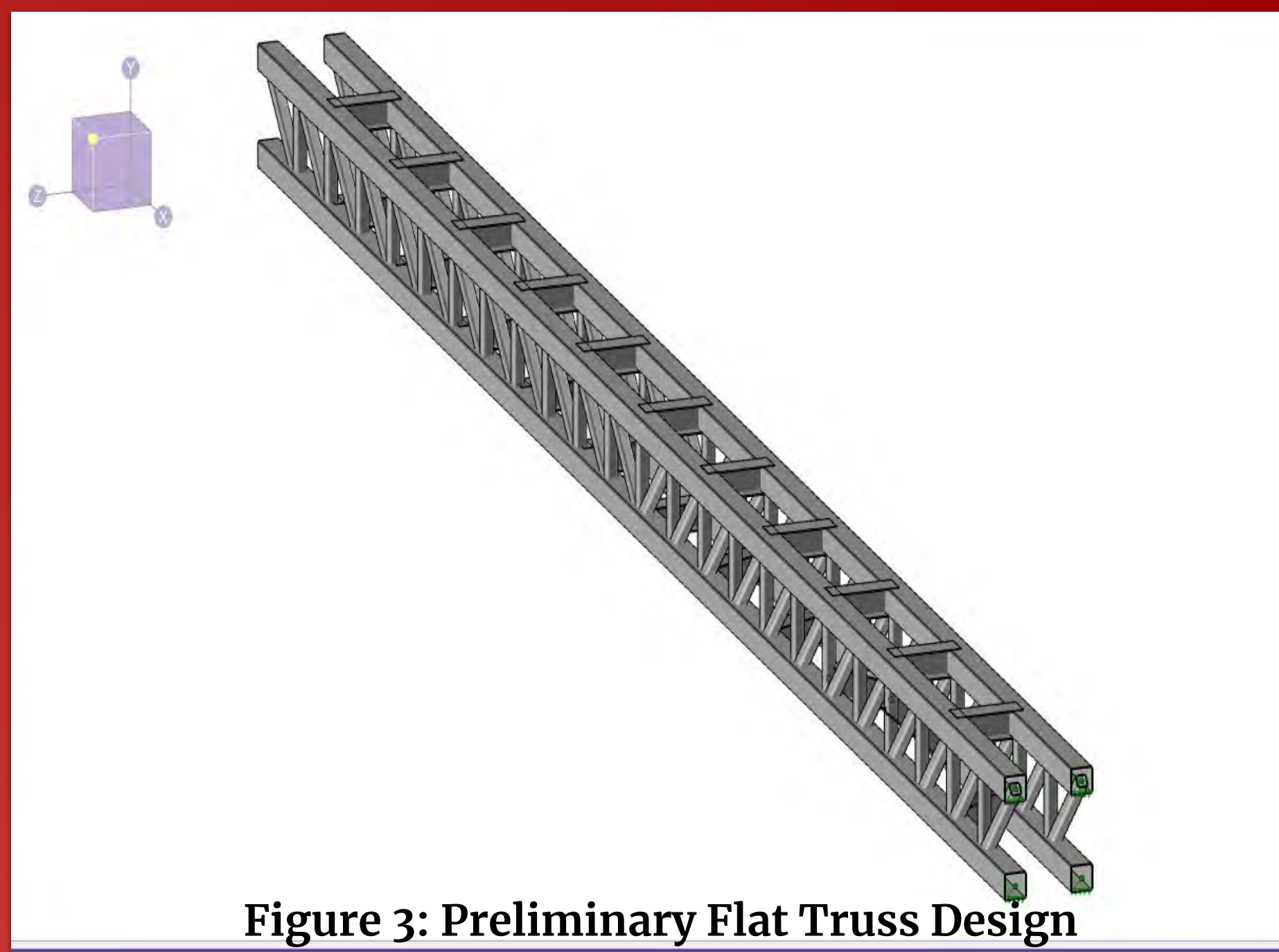


Figure 3: Preliminary Flat Truss Design

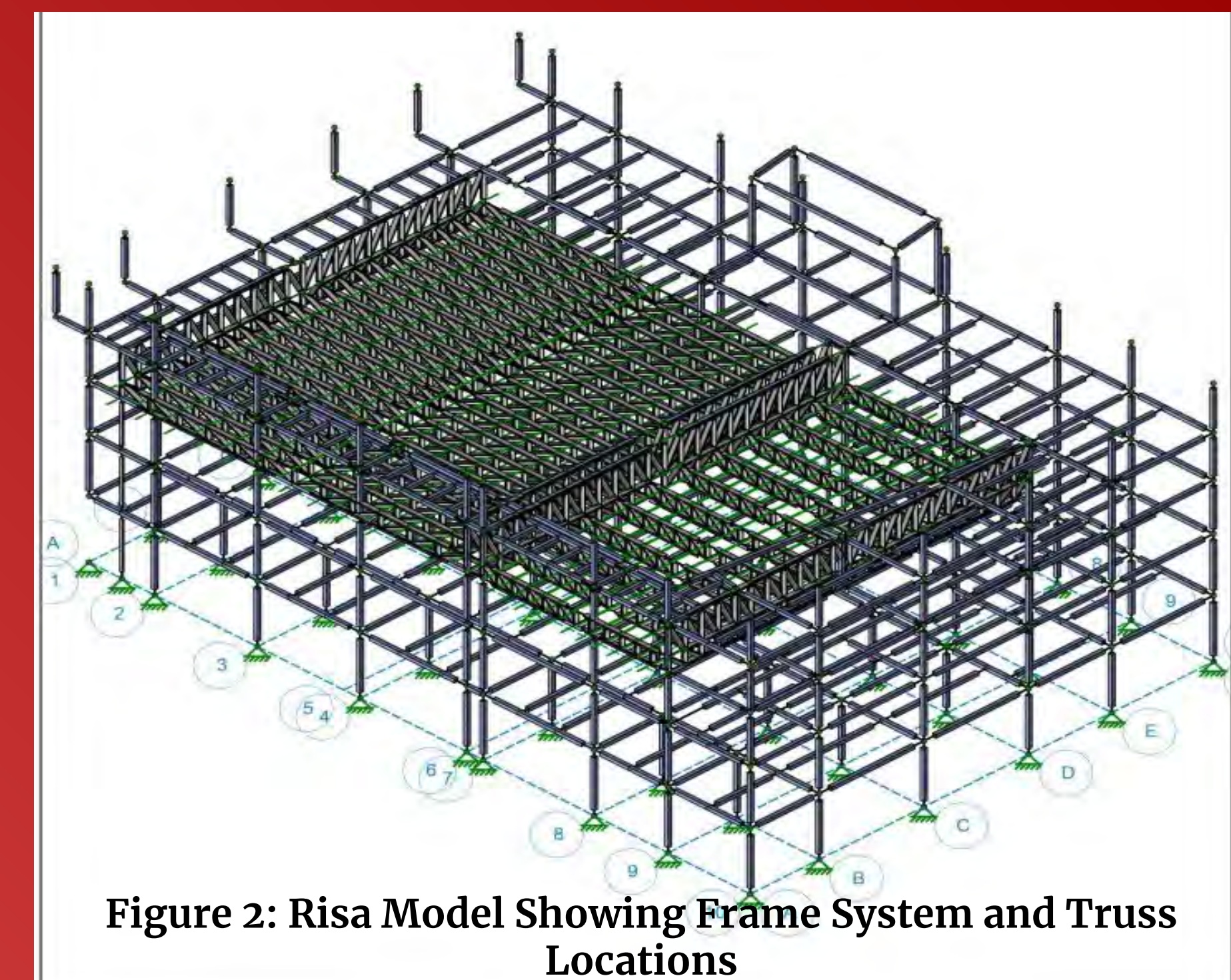


Figure 2: Risa Model Showing Frame System and Truss Locations