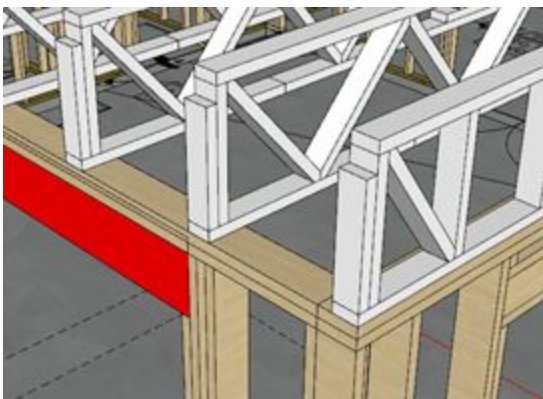


Case Study #4: Floor System Analysis

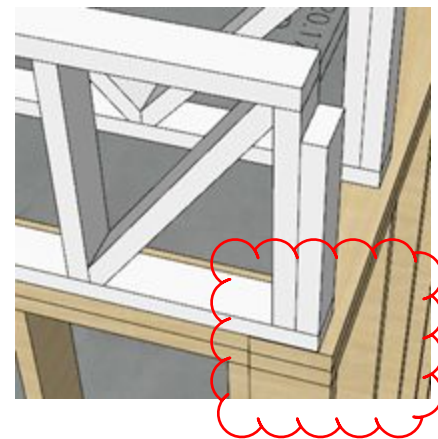
Client: Heritage Homes of Jacksonville, Jacksonville, Florida

Project: Client requested a Constructability Review for this project - a 3D structural model of the foundation, floor systems, walls and roof. The proposed floor system for the project included floor trusses. **We are able to work with client vendors to obtain the 3D model files from the truss manufacturer's system. We then import these truss models into our 3D models and snap them into the intended position. We routinely find mistakes, some minor, some major, but ALL of which may incur unnecessary expense and time.**

The foundation walls were modeled per the architectural drawings. The floor truss model, provided by client, was imported into the foundation model and trusses were placed on the top plate at one corner. The first discovery, in verifying alignment around the entire house, was a very common mistake/issue - when the trusses were snapped to the plate on the front of the house, they were 1" short from flushing out with the back wall framing. The truss engineer assumed that the dimensions specified in the architectural plans were "sheathing to sheathing", so $\frac{1}{2}$ " was taken off each end to allow for sheathing. This is a common practice, however the architectural plans dimensions referenced "framing to framing". Every builder has probably dealt with this sort of issue (too short or too long) at some point in time, and has had to spend time and money correcting them in the field. We prevented that from occurring.



Trusses were placed flush with framing on front wall

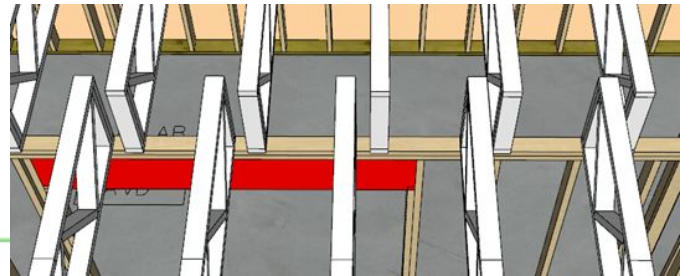
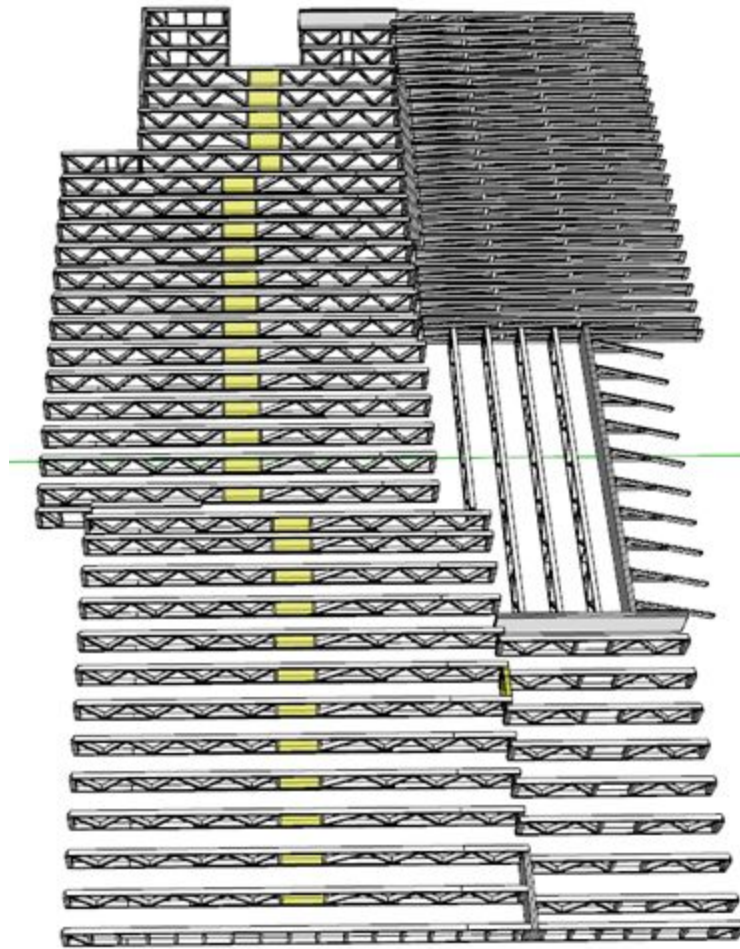


Trusses were 1" short on rear plate

The next discovery, obvious when looking at a 3D representation of the trusses, vs a 2D drawing, was that the HVAC duct chases were not aligned. Floor trusses commonly have rectangular chases in the center portion of the truss. Many times, when a house has a bump out or recess, the trusses are engineered by default to center the chase - this situation impacts the HVAC ductwork placement.

Notice below how the chases are not aligned. There was another issue discovered as well. The garage includes a partition wall (bearing wall) between the garage and the storage and mechanical room at the rear of the garage. The HVAC system was intended to be placed in this room and the

supply duct was to go up, over the wall and into the duct chase. The truss engineer had laid out the floor trusses with staggered trusses from partition to rear wall. This would have essentially eliminated a path for the ductwork. When



the builder showed the HVAC contractor these images, he basically was told that the house was “not ductable as is”.

Thankfully we were able to catch this before it became an issue and an **EXPENSE.**