

May 11, 2005

Mr. Tom Schill
President
Tall Ships Homeowners Association Board

Re: Alcove Modifications to Tall Ships Condominiums.

Dear Tom,

Per your request, I will attempt to explain some of the possible effects that the alcove modifications that were done to several of the Tall Ship condominiums could have and why they should be repaired. The area in question is between the living room and the master bedroom where there is a recess in the living room wall for a closet. Some of the condo owners removed the wall in the master bedroom and added a wall in the living room to make the wall recess in the master bedroom rather than the living room. According to the plans of the Tall Ships Condominiums that I have seen, the wall in the master bedroom that has been removed is designed to be load bearing. I have verified that visually in my inspections of the repairs that have been done to the condo structures recently.

The reasons I will give for not allowing this modification are in addition to the fact that the condominium association owns the structures and not the individual unit owners that had the modifications done. They essentially modified a structure they did not own.

I remember the comments of one homeowner when we visited his unit year before last. He stated that the contractor that did the work told him the wall was not a load bearing wall. It makes me question the competence of the contractor and also question if the work was done with a building permit and an inspection by code officials. The contractor obviously should not be licensed if he is willing to do such a modification without knowing how it will affect the structure and without proper inspection and permitting.

The floor system in the condos is made up of floor trusses that are manufactured using normal everyday 2x4's. The 2x4's are used with their weak axis horizontal so that they are in their weakest position. A truss is a structure in itself that takes weak members and assembles them in an assembly that is stronger than the sum of its parts as long as it is used properly. For instance, one 2x4 laying on it side won't carry its own weight for very far without sagging. Put 2 2x4's in a truss 14" apart with one above the other and connect them with other 2x4's so that they are basically braced relative to each other and they will span across a room and carry a floor load as long as other trusses are used in conjunction with them and plywood is used to make a floor system. The individual 2x4's are still weak, but within the truss system, their best properties are used and they make a very

strong system. This is what was intended in using the 2x4 floor trusses in Tall Ships.

When the load bearing walls were removed and basically replaced by another wall several feet away, the trusses were asked to do something they were never intended to do. They must carry the floors, walls, furniture and people from two floors above over to another wall down through the truss and back over to another wall. They must do this even though the new walls might not be located in a place on the truss that is designed to do this. Also, the truss is asked to transfer a load out on its span rather than just passing the load through to a wall directly below the load above.

Trusses have members at diagonals and vertically that intersect with the top and bottom 2x4's. The points of intersection are called panel points. The intersections reinforce the top and bottom members and make them very strong at these points. Loads passing from above directly through to a wall below do not cause distress in the members as long as they are within the design limits of the panel points. Sometimes additional reinforcing is added to help in passing the loads through to the wall below. This might be additional vertical members or maybe plywood sheets attached to each side of the truss. Either way, the load just passes through the member to the wall below.

In the case of the removed load bearing walls, not only are the loads coming down on unreinforced points on the trusses and passing the loads through the trusses to the wall below, they must span with the loads from above over to a different wall. A floor truss that is supposed to span across a room and carry the loading on that floor only to a wall, is now supposed to carry the entire load from two floors above along with the walls in addition to its normal loads. It simply is not designed to do that.

The truss has a crushing load at an unreinforced point and a large load causing extra flexure (bending) loads on it. It was not designed to do either. The truss that is the floor above the removed wall, must transfer this load, and the truss below this wall must transfer this load. Both trusses have been placed in jeopardy. Possible failure of these trusses might be without much warning like noticeable deflection or sagging. It could be sudden if the top or bottom members were to just shear off or fail in flexure. Flexure failure could happen with out much sagging because the span between panel points is small and does not allow for much displacement before failure could occur. The results would not just affect the condo where the modification was done. It would affect the units above as all support in the area would be gone. Other than the human aspect of such an event, repairs would be extensive and very costly. I would not assume that any type of insurance would be in affect for such an event since it was done basically illegally. Any insurance in affect would certainly be the source of legal action against the homeowner of the modified unit.

Any owners of the modified units need to realize, the consequences of not doing a repair are not just to them, but also their neighbors above them and possibly each side of them.

As to why a failure has not occurred to date, the loads simply have not been great enough in combination to cause such an event. The next occupants to move into a condo that is in such a situation just might bring the item to finally trigger a problem. It might be a waterbed or a piano or simply a dropped load from a mover. Hopefully none of the above will ever occur. The other reason for it not occurring is the ability of wood structures to work around the stupidity of people and function sometimes in unexplained ways.

I was not involved with the design of the Tall Ship Condos, but the engineer of record for the complex recommended a repair be done. I think we should heed his advice and make sure the repairs are done.

As a homeowner in Tall Ships, I am offended that another homeowner would refuse to take care of this problem. It could eventually be a problem for the association to take care of if the individual homeowner is not financially able to make the extensive repairs required should a failure occur. It would not be the responsibility of the owners of the collaterally damaged units. The financial risks are enormous when you consider the possible human issues. It would also be devastating to the reputation of the Tall Ships Condominiums complex and the property values. I hope this will explain in part why the repairs should be done.

Sincerely,

Richard P. Hill, PE