



Executive Summary

Sojka Pavilion and the Kinney Natatorium are a 122,000+ Sqft addition to the Kenneth Langone Recreation and Athletic center built to house a 4000 seat basketball arena and NCAA regulation size swimming pool on the campus of Bucknell University in Lewisburg Pennsylvania.

The floor system of each building section in the Kenneth Langone Recreation and Athletic center are a composite construction, using 2" deep 18 gauge metal decking with $\frac{3}{4}$ " x 5" shear studs and 6 $\frac{1}{2}$ " deep concrete slab. This floor is supported by W shape steel beams varying in size as needed.

In Technical Assignment #2 it was determined that alternative flooring systems should be considered for this building. The most likely alternative system for this building is an all wood system composed of structural glulam beams and a wood panel flooring system. With the change of the floor system to wood a change to the entire structural system will be evaluated. This change would include the columns being changed to structural glulam members as well as the roof system being changed to structural glulam arches. In addition to the structural and floor systems being changed the lateral system will also be changed to use both structural glulam member and tensioned steel cables as it was determined in Technical Assignments 2 and 3 that the current lateral force resisting system was inadequate. However, strength isn't the only criteria of an engineers design.

In order to determine if the new system is an economical alternative, a cost analysis will be performed on the new and old systems. The comparison will be performed between the original steel structural system and the newly designed wood structural system.