

Section 10 - Summary and Conclusions:

After performing design, cost, and schedule analysis on the construction of the Pearland Recreation Center and Natatorium the following conclusions have been reached:

- 1) The structural system in the natatorium should be changed from glulam to structural steel. This change would save over \$600,000 in construction costs and have no effect on the construction schedule, durability and life-cycle costs of the building.
- 2) A water-cooled chiller with a cooling tower mechanical system should replace the air-cooled chiller. This modification would save almost \$50,000 in construction costs, almost \$250,000 in yearly energy costs, and would have no implications to the construction schedule. A downside to this change would be that the cooling tower would require additional maintenance to control the water in the cooling tower, however since the building contains a swimming pool there should already be qualified maintenance staff on site that could also easily oversee the maintenance of the cooling tower.
- 3) For complex public buildings such as the Pearland Recreation Center and Natatorium, a design-bid-build delivery method is preferred over design-build. Design-bid-build allocates financial risk away from the owner and includes the all important checks and balances between team members such as the architect and general contractor. These checks and balances are lost in a design-build delivery method because the architect and general contractor are part of the same firm and the owner is no longer included in the interaction between these parties.
- 4) At the connection between the glulam column and the concrete footers in the natatorium, a welded connection should replace the current, bolted connection. Construction of the bolted connection is difficult as the holes in the column baseplate need to be precisely aligned with the anchor bolts in the footer. A welded connection eliminates this complexity. A welded connection should replace the current bolted connection between the glulam column and the concrete footers in the natatorium.

Making the above modifications to the Pearland Recreation Center and Natatorium would save about \$650,000 in construction costs, significantly reduce yearly energy costs, maintain the construction schedule, produce a higher quality product, and create a more constructible building.