Todd Scales
Germantown Indoor Swim Center
Germantown, MD

Executive Summary

Research Proposal

The following proposal describes my objectives for Thesis investigation to be conducted next Semester. These objectives will be evaluated based on cost, schedule and process improvements.

Analysis 1: Steel Handrail Package

This analysis of the steel handrail package will investigate a value engineering option to the cost and materials associated with the original design.

Analysis 2: Dehumidification system

This analysis looks into the possible improvement of the dehumidification system currently in the design for the natatorium.

Analysis 3: Building Façade

This analysis investigates a more highly insulated, day-light transmitting material to replace the metal panels. This alternate material is also expected to improve building aesthetics.

Analysis 4: Industry Related Research- Construction Incentives

In this analysis, I will further investigate my interest in construction incentives which I gained at the PACE Roundtable event this fall.

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Research Proposal

The Germantown Indoor Swim Center is not the first building of this type to be built for the Department of Recreation. It is actually the fourth in the area. Not to say that mistakes were made when constructing the first three, but changes were made and the best aspects of construction were taken from all in the design of the newest one. The county is talking about this project as their "Flagship Natatorium". This concept has made it difficult to detect possible problem areas throughout construction. The research areas I am proposing are mainly value engineering suggestions, aesthetic improvements, schedule reductions, and process improvements.

Proposal Weight Matrix

Description	Research	Value Eng.	Const. Rev.	Sched. Red.	Total
Incentive Research	0.20	0.00	0.00	0.00	0.20
Handrail Package	0.00	0.15	0.10	0.05	0.30
Dehumidification System	0.00	0.15	0.05	0.00	0.20
Alternate Façade	0.00	0.10	0.10	0.10	0.30
Total	0.20	0.40	0.25	0.15	**100%**

Analysis 1: Steel Handrail Package

Background:

Inside the Germantown Indoor Swim Center there is a total of just over 840 linear feet of steel railing according to the drawings. Along with being an expensive package, the steel railings must be covered with an epoxy coating to protect the metal from the corrosive indoor air conditions of the natatorium.

Proposal:

In my proposal of the Steel Handrail package, I will investigate changing the railings in the natatorium areas, namely the raised seating area, the leisure pool railings, and stairwells joining floors. The change I am proposing is from a steel railing package to a non-metallic alternative. The change to a non-metallic railing system will eliminate the need to cover the railings with the expensive epoxy coating that is required for all exposed surfaces in the pool areas.

Forrester Construction has thought of this as a value engineering suggestion for the project. Forrester has come in with an alternate system from Saftron. "Saftron manufactures high quality rigid vinyl safety rails using specially formulated polyvinyl compounds." Although Saftron's product will save the project approximately $121,000.00 this alternative appears to be a lower quality product that can be found to replace the steel. I would like to look into other alternatives that would be of a quality closer to what is proposed in the steel package.

Fig.1 Saftron railing in stairwell

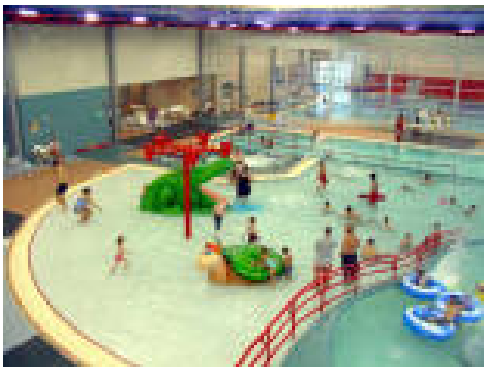

Fig.2 Saftron railing in a leisure pool situation

Analysis 2: Dehumidification system

Background:

The Germantown Indoor Swim Center will contain an elaborate dehumidification system that will keep the indoor air quality within a strict set of regulations. The design system in the drawings is somewhat costly, and inefficient. With two 25hp fans that will run continuously. 25hp fans seem to be large for this purpose and running the continuously would consume a lot of energy.

Fig.3 Dectron Dehumidification Unit

Proposal:

In my Proposal, I would like to find a dehumidification system that has possibly a less expensive initial cost, a lower maintenance cost, and more energy efficient. This alternative system will also have to meet or exceed the standards set for the original system. I plan to visit several natatoriums over the Holiday break in my home area of Pittsburgh. For example, the health club I belong to was recently constructed by a local contractor and houses two pools as well as a sauna and hot tub area. I am currently trying to get in touch with the general contractor and the HVAC contractor from that project to talk about the system in place. A number of other similar facilities have recently opened in my area and I

plan to contact contractors associated with these projects. I would like to compare the design system with systems they have installed and receive feedback on other alternatives.

Analysis 3: Building Façade

Background:

The current building façade for the Germantown Indoor Swim Center is a brick veneer on the lower 1/4 and a painted industrial metal panel the rest of the way up. From outside, this $16 million indoor swim center looks like a warehouse. This metal panel façade is not very attractive and has poor insulation properties. It is also a cause for extensive interior lighting.

Proposal:

I am proposing to install a more impressive upper skin for this project. For the money spent on the building, I think it should have a more dramatic appearance. Systems such as "Kalwall" have been used in situations such as this. Kalwall is the most highly insulating, diffuse light-transmitting, structural composite sandwich panel technology in the world. This system will reduce energy costs by nearly eliminating indoor light fixtures in the open pool areas. This alternate wall system will also allow light to be emitted through it into the night sky. This effect will enhance the exterior of the project. Kalwall is also highly insulating, which will help with the indoor heating of the natatorium. Kalwall may also be a possible replacement for the glass in the eight glass skylights in the roof structure. Replacing the glass may also help with heat transfer through the skylight roof panels.

Fig.4 Kalwall emitting light at night

Fig.5 Light transmitting wall system

Analysis 4: Industry Related Research- Construction Incentives

Background:

After attending the PACE Roundtable event this year, I have become very interested in construction incentives. It was the first session I sat in on and after hearing professionals on almost every level talking about different incentives, I couldn't get the idea out of my head. The session involved thoughts concerning construction incentives from subcontractors, general contractors, project managers, and even an owner.

Proposal:

I plan to conduct research in the area of construction incentives. I am interested in why incentives work on a number of projects and do not work on others. I plan to detect if a certain type of incentive works better than another type and if the possibility of a damages clause would further a project's in time finish and under budget. Do any professionals feel that incentives drive companies to finish a project faster and forget their commitment to quality? I

would also like to know if something along the lines of good relationships and repeat business from an owner are enough incentive in itself to push companies to complete work. Gilbane Building Company has initiated an arrangement for making project decision making easier. This can be seen as an incentive program in that the better a relationship is between the GC and subcontractors, the easier it is to propose and make changes to a project. I intend to interview industry professionals on this issue. My professional questioning base will stretch to the extents of the construction business. I aim to collect research from laborers clear through the ranks of project executives and even owners if the opportunity presents itself. My research will be conducted by means of surveys, questionnaires, and person to person interviews.

Steps to acquire information:

- Start with personal interviews
    - This approach will enable me to ask a few questions and work off their responses to get where I need to be.
    - There are plenty of different projects on or near campus that I can talk to a wide variety of companies and project players.
- Produce surveys and questionnaires
    - The questions included with these will be formulated from the personal interviews.
    - These questions will be rather brief yet open ended.
        - This will allow a professional to elaborate as little or much as they wish.
    - I know project managers do not have a lot of time to be bothered with my questionnaires.
        - My list of questions will not be lengthy as to discourage them from completing the questions.

- Collect surveys and questionnaires
- Compile data collected from all types of research
- Generate results and interpret
- Report results and interpretations