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Kettler Capitals Iceplex
Arlington, Virginia

Structural Option
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PROPOSAL EXECUTIVE SUMMARY AND BREADTH TOPICS

EXECUTIVE SUMMARY

The Kettler Capitals Iceplex is the practice facility for the NHL franchise, Washington Capitals. It is located in Arlington, Virginia just outside Washington D.C. The Iceplex was constructed on top of the existing parking structure for the Ballston Mall in Arlington. The original parking structure consists of concrete two-way slabs and post-tensioned concrete on levels one through 7. The Iceplex was constructed using a composite steel system on levels eight and nine.

When the Iceplex was constructed on top of the existing parking structure, the gravity system, the lateral system, and the foundation system all needed to be reinforced. This was proven to be the most complicated part of the design.

A solution to this problem would have been to tear down the parking structure and construct the new building from scratch. This proposal outlines the steps that will determine if this is indeed a feasible solution. The Iceplex and parking structure will be completely redesigned. The two ice rinks will be moved to the first level on a slab-on-grade, which will help limit deflections. The parking structure will then be designed as a separate structure constructed of a two-way slab with beams and will span over the ice rinks. This will create the need for a large transfer system.

In addition to the complete structural redesign of the Iceplex and parking garage, two breadth topics will be considered. First, an architectural/civil site breadth will examine the most efficient way of laying out the building on the site and will account for any changes in architecture layout. Second, a construction management breadth will compare the cost and schedule of the proposed design to the actual design. Based on the structural redesign and the two breadth topics, it will be concluded whether demolishing the parking garage and building from scratch is a feasible and economical solution.

A list of tasks to be completed and a calendar of these tasks are also included in this proposal.

ARCHITECTURAL/CIVIL SITE BREADTH

The architectural/civil site breadth will start off by analyzing the site for vehicular and pedestrian traffic. Since the parking structure and Iceplex are going to be designed from scratch, it should be determined whether a more efficient site layout is possible. Currently, the parking garage has only one entrance and one exit off a main street. Changing the entrance/exit layout and location should be evaluated.

If vehicular and pedestrian access is changed, so will the architecture of the building. Building entrances may need to be relocated to account for new site access locations. This will have an impact on the layout of the building. For instance, team locker rooms and corporate offices may be rearranged in order to make the architectural design more efficient. The layout of the parking garage and the number of parking stalls should also be considered. Currently, the garage uses a circular ramp for vertical transportation. A more conventional layout, such as that off the East Parking Deck on Penn State's University Park campus, should be evaluated. If at all possible, the vehicle capacity of the parking garage should not be decreased. Another thing to be considered in this breadth topic is the location of shear walls. Ideal locations for the lateral system should be determined based on the new building architecture.

CONSTRUCTION MANAGEMENT BREADTH

The construction management breadth will cover two topics: a cost comparison and scheduling impacts. First, the cost of demolishing the existing structure and building from scratch will be compared to the actual cost of reinforcing the existing structure for the addition of the Iceplex. A detailed cost analysis must be completed using RS Means. A detailed list of actual costs must also be obtained from the contractor of the project. Based on this cost comparison, it can be concluded whether or not the demolition and reconstruction of the Iceplex is a better solution compared to reinforcing the existing structure. The schedule of the proposed solution will also have a major impact on the conclusion of this thesis. If the existing parking structure is demolished, the Ballston Mall will be without parking. It is important to consider how this will impact the mall and surrounding area. The exact amount of time the parking structure will be out of service and its monetary value to the mall must be determined. Combining the cost analysis and scheduling impact, a conclusion can finally be made. Is demolishing and starting from scratch worth it?