From: Clark, Gordon T. (Consultant)
Sent: Thursday, September 25, 2008 2:43 PM
To: Williamson, Alec
Subject: FW: Seattle Skyway Review

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Sent: Thursday, September 25, 2008 2:39 PM
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Eric Peiffer Review of Jim Powers presentation last night. Done in advance of the presentation – but a companion to my meeting minutes sent earlier

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I did some quick calcs. A steel bridge would cost about 33% ($610/sf) more than our current costs for the precast segmental bridge ($460/sf). Total bridge cost unfactored would then be $310 million compared to our current estimate of $230 million. The risk typically increases cost by a factor of 2 to 3. This is more of an apples to apples comparison.

For the original idea of 120 feet wide by 1 mile long we are looking at $390 million and factored up it would be in the range of $780 to $1,260 million (1.3 billion). I don't think the guy's costs are that far off for a straight up bridge estimate within the city limits. BUT, the estimate would not cover the remainder of the project. Seawall cost alone is approximately equal ($210 million) to the bridge replacement costs ($230 million).

- A 430 foot span would require a superstructure approximately 16 to 20 feet deep. Could be haunched to improve aesthetics.
- Capbeams for the structure would most likely be in the 12 to 14 feet depth range so height would have to be increased to 85 feet. Superelevation would also increase this height. If traffic is to remain on the viaduct during this operation the capbeam would need to be elevated an additional 14.5 feet to maintain current

clearances. The structure height would then be approximately 100 feet and would approximately double the existing structure height (55 feet).

- Columns sizes would most likely be around 12' diameter for a 6-lane bridge. An 8-lane bridge would produce 14' diameter columns.
- Column and foundation construction (for any size of foundation) around the existing viaduct would be problematic in several locations (Pioneer Square and Pike to BST where there is close proximity to existing structures) and is estimated to be applicable to 50% of the structure. (This assumes the Moving Forward Project has completed the southern structures.)
- Existing viaduct would not support additional weight during construction as it currently has foundation settlement problems and vehicle load restrictions. The additional weight would likely fail the structure. At best it is a major construction risk.
- Assuming that ducted warm air is intended to continuously heat the steel superstructure to eliminate moisture condensation. Have not heard of this before. My assumption is that water and especially salt water spray would still contact the structure before being evaporated. Corrosion would still occur and the structure would need to be maintained through painting. Current practices are to avoid steel bridges near saltwater bodies where not necessary.