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To start off with, I watched them build the viaduct. I watched them drive steel pilings down until they wouldn't go any further. That was the foundation. That took care of any seawall deterioration, doesn't matter.

After the earthquake, I walked the length of the viaduct and observed eight columns that were fractured on the quake zone and 80 that were still perfect. And that viaduct, even with a fracture on it, is still carrying the load because of the heavy steel that was put in it when it was built.

H-045-001 My feelings are a tunnel would be too dangerous being on the fault line. The fracture would flood and kill everybody that's in the tunnel if it flooded. The street -- the tunnel function -- or

H-045-002 construction should be paid for by the adjacent property owners. I paid for the property -- for the street in front of my house, and let them pay for that one.

For a very small fraction of the cost of a new installation, the existing one could be repaired and

H-045-001

The preferred Bored Tunnel Alternative is a safe alternative. Generally, structural engineers agree that tunnels are one of the safest places to be during an earthquake, because the tunnel moves with the earth. No Seattle tunnels were damaged during the 2001 Nisqually earthquake, including the Mt. Baker and Mercer Island I-90 tunnels, Battery Street Tunnel, Third Avenue Bus Tunnel, and Burlington Northern Tunnel.

The bored tunnel would be built to current seismic standards, which are considerably more stringent than what was in place when the viaduct was built in the early 1950s. The bored tunnel design includes improving relatively soft, liquefiable soils found near the south tunnel portal. Emergency exits would be provided every 650 feet in the tunnel. Project engineers have studied current data on global warming and possible sea level rise and concluded that the seawall provides enough room to protect the tunnel from rising sea levels. The engineers also considered the possible threat of tsunamis during the design process.

H-045-002

Although costs are an important part of project planning and decision-making, they are purposely not part of the environmental review process.

The lead agencies recognize that retrofitting highways, roadways, and bridges is often a viable option to counter earthquake threats. However, unlike other bridges and structures in the area, it isn't practical to retrofit the viaduct by only strengthening one or two structural elements. Fundamentally, such fixes transfer the forces from one weak point in the structure to another, and the viaduct is weak in too many places. The concrete frames, columns, foundations, and even the soil under the structure don't provide enough strength by today's standards. The lead agencies have studied various retrofitting concepts, and all of these concepts fail to provide a cost-effective, long-term solution that adequately addresses the risks to public safety and the weakened state

H-045-002

useful for many years to come. There's no fractures in the rest of the columns. I walked the whole length of it. That's about the sum and substance of it. It's very, very well built.

of the viaduct. The lead agencies also determined that retrofitting 20 percent of the viaduct as discussed for the Rebuild Alternative is not reasonable.