PUBLIC COMMENTS FOR IBR COMMUNITY BENEFITS ADVISORY GROUP

Received between February 27, 2025 and March 27, 2025

Comment Received: 3/25/2024
From: Bob Ortblad
Email Subject: Community Benefits Advisory Group - Public Comment
Attachment Included: Yes

Community Benefits Advisory Group

Public Comment for March 27, 2025 meeting.

See attachment.

Respectfully
Bob Ortblad MSCE, MBA

*ADA compliant version of the attachment can be made available upon request

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February 5, 2025

Letter: 'IBR's seismic lie'

Engineer Bob Ortblad claims the Interstate Bridge Replacement Program is misrepresenting the risk of the current I-5 bridges collapsing during an earthquake

The Interstate Bridge Replacement Program (IBR) is misrepresenting the risk of the current I-5 bridges collapsing during an earthquake.

The IBR claims that liquefaction will cause the I-5 bridges to fail, similar to the Niigata Bridge in Japan, which had only nine 52-foot-long, widely spaced piles per pier. In contrast, the I-5 bridges have 100-foot-long, tightly spaced wood piles (90 per pier) that compact the soil, making them resistant to liquefaction.

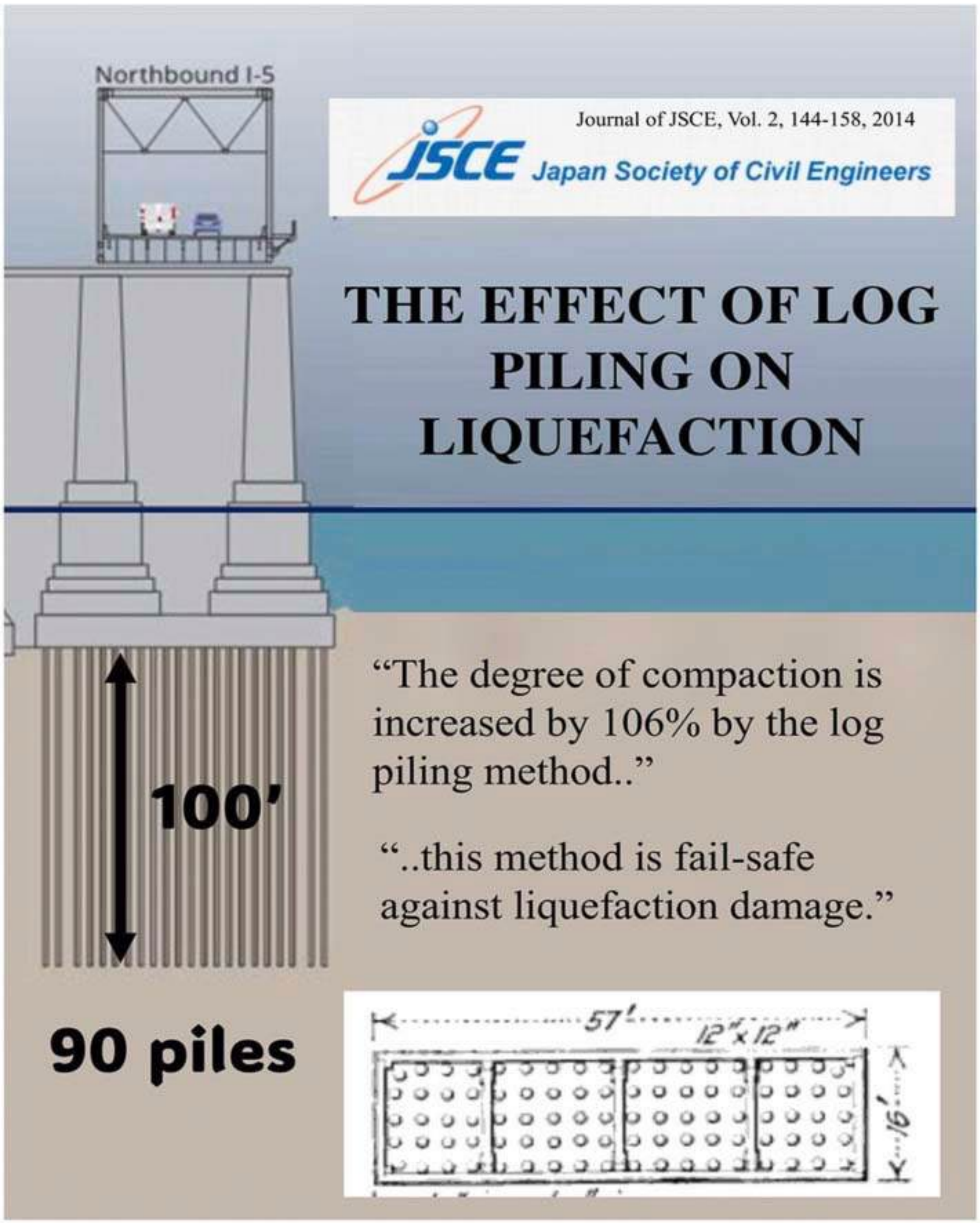
Bob Ortblad

A Japanese study has demonstrated that closely spaced wood piles enhance soil compaction and serve as a "fail-safe against liquefaction damage." The IBR plans to use only six drilled shafts per pier, which will not effectively improve soil compaction. Additionally, the IBR's bridge design may be less resilient to earthquakes than the current I-5 bridges. The IBR's bridge trusses will be twice as long, twice as wide, fifty feet higher, and five times heavier. Its 120-foot piers will rest on only six drilled shafts (up to 250 feet long) in uncompacted soil.

The increased weight and height of the IBR bridge, combined with its support on uncompacted soil, may make it less resilient than the current bridges during an earthquake. Resilience is defined as the capacity to withstand or quickly recover from damage. Consequently, repairing any earthquake-induced damage to the existing bridges would be much faster than repairing a significantly larger and heavier IBR bridge.

Bob Ortblad MSCE, MBA
Seattle

Showa Bridge Niigata, Japan 1964



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March 17, 2025

Letter: IBR's billion-dollar risk, another Abernethy Bridge financial disaster?

Bob Ortblad says the IBR is hiding a serious "boulder" problem that threatens the feasibility of the Columbia River bridge design

The Interstate Bridge Replacement Program's (IBR) I-5 Bridge replacement project will make the I-205 Abernethy Bridge cost overrun look like a bargain.

The cost for the Abernethy Bridge has more than tripled, from $248 million to $812 million, and continues to rise. A significant portion of this increase is attributed to the bridge's 28 drilled shafts, of which only 6 shafts are in the Willamette River.

Bob Ortblad

In comparison, the IBR plans to use 160 drilled shafts, with 150 of them situated in the more challenging Columbia River. Most of these shafts will be far from ether riverbank, making their construction more difficult and costly. The IBR's shafts will necessitate 3,311 temporary piles and 392,000 square feet of temporary platforms. These will require a costly fleet of barges, tugs, marine cranes, impact pile drivers, vibratory piles drivers, and a very specialized 100-ton shaft oscillator.

While each Abernethy Bridge shaft took about one month to complete, the IBR claims it can finish the more difficult shafts in just 5 days each, completing all 160 shafts in 800 nonconsecutive days. Additionally, the IBR claims that drilling can occur year-round. However, according to the U.S. Army Corps of Engineers and Oregon Fish & Wildlife, there is a four-month in-water work window from November 1 to February 28. The IBR also estimates it can complete the Columbia River bridges in 4 to 7 years and the North Portland Harbor bridges in 4 to 10 years.

It is doubtful the IBR can complete a shaft in five days and drill year-round, ignoring a four-month in-water work window. The Abernathy Bridge was restricted by an in-water work window, and each shaft took 30 days. Based on this, 160 shafts, at 30 days each, would require 4,800 nonconsecutive days to complete, potentially adding a decade to the construction timeline. Conservatively assuming Abernathy Bridge's 28 drilled shafts are 25% of the current $812 million cost, then each shaft would cost about $7.25 million. At $7.25 million/shaft IBR's 160 shafts will cost over $1 billion.

Feature

MALCOLM DRILLING COMPANY PERFORMS
The Columbia River Crossing Test Program

By Alan Rashard, Malcolm Drilling Co., Inc. and Tait McCutchan, Project Manager

Al Rashard is the Vice President of Malcolm's Northwest Division, Kent, Washington. He currently serves as the Vice President on the ADSC's Board of Directors. (Editor)

Located on Interstate 5 and crossing over the Columbia River connecting the state of Oregon and Washington, the Columbia River Bridge is the last active drawbridge on the U.S. Interstate Freeway system. It is an old and seismically vulnerable bridge that not only serves as the main artery between Portland, Oregon and Vancouver, Washington, but is also the main trucking lane for commerce from the West Coast into Canada. The existing bridge is founded on timber piles in very questionable soils.

As a result of the "necking down" of heavy traffic on the bridge, over 400 crashes occur per year. It is projected that the number of accidents will increase to over 700 by year 2030. Traffic delays of four to six hours occurring daily are common. Delays of freight delivery result in business costs of millions each year. In its current configuration, there are limited transit options to accommodate bus and bicycle traffic.

The plan is to construct a new modern concrete structure that would wrap around the existing bridge and improve the functionality of several closely spaced interchanges. The intent is to dramatically improve traffic flow as well as to provide a right-of-way for light rail transit running from Portland, Oregon, to Vancouver, Washington. The project would also include pedestrian and bicycle access.

Due to the location of the project it was necessary to involve several government agencies in the decision process. These included the Washington DOT, Oregon DOT, Federal Highway Administration, City of Portland, City of Vancouver, SW Washington Regional Transportation Council, Metro, C-Tran and "Trimet."

The existing ground conditions posed significant challenges in determining the best method to support the new structure. The riverbed is characterized as having a significant layer of liquefiable materials above catastrophic flood deposits. These lie over the Troutdale Formation which is made up of cemented gravels, cobbles and boulders. This condition required that the depth of the foundations would have to be in excess of 250 feet. As a result, the agencies decided to circulate a special project to perform a test program. The test consisted of the installation of three drilled shafts and one driven pile. This was to be undertaken in order to test capacities and installation methods that had been assumed for the project. The shafts consisted of one 6 foot diameter shaft 120 feet deep, one 8 foot diameter shaft 150 feet deep, and one 10 foot diameter shaft 250 feet deep. The driven pile was 2 feet in diameter, installed to a depth of 130 feet. The 10 foot diameter shaft was specified to include permanent casing to a depth of minus 215 feet. The other shafts called for temporary casing. All three shafts were to be constructed using Osterberg Load Cells, and string gages, and were to be tested using Cross Hole Sonic Logging (CSL) and Thermal Integrity methods. Due to the planned loads and how the 10 foot shaft was to be tested and loaded, it was necessary to use two separate layers of Osterberg Load Cells. The configuration called for one set of five 6,000 kip cells 6.9 feet up from the bottom, and a layer of three 6,000 kip cells 22.9 feet from the top. Installing such extensive instrumentation in a single 250 foot long cage, and allowing for only one splice, presented a significant challenge.

Liquefiable Zone
Troutdale Formation
Columbia River Bridge illustration.

Since the planned project covered an area that bounded two states, and due to the fact that there was a significant distance from beginning to end, two of the test shafts (the 10 foot diameter and the 6 foot diameter) were located on an island on the Oregon side, with the 8 foot diameter shaft located

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FOUNDATION DRILLING August 2013

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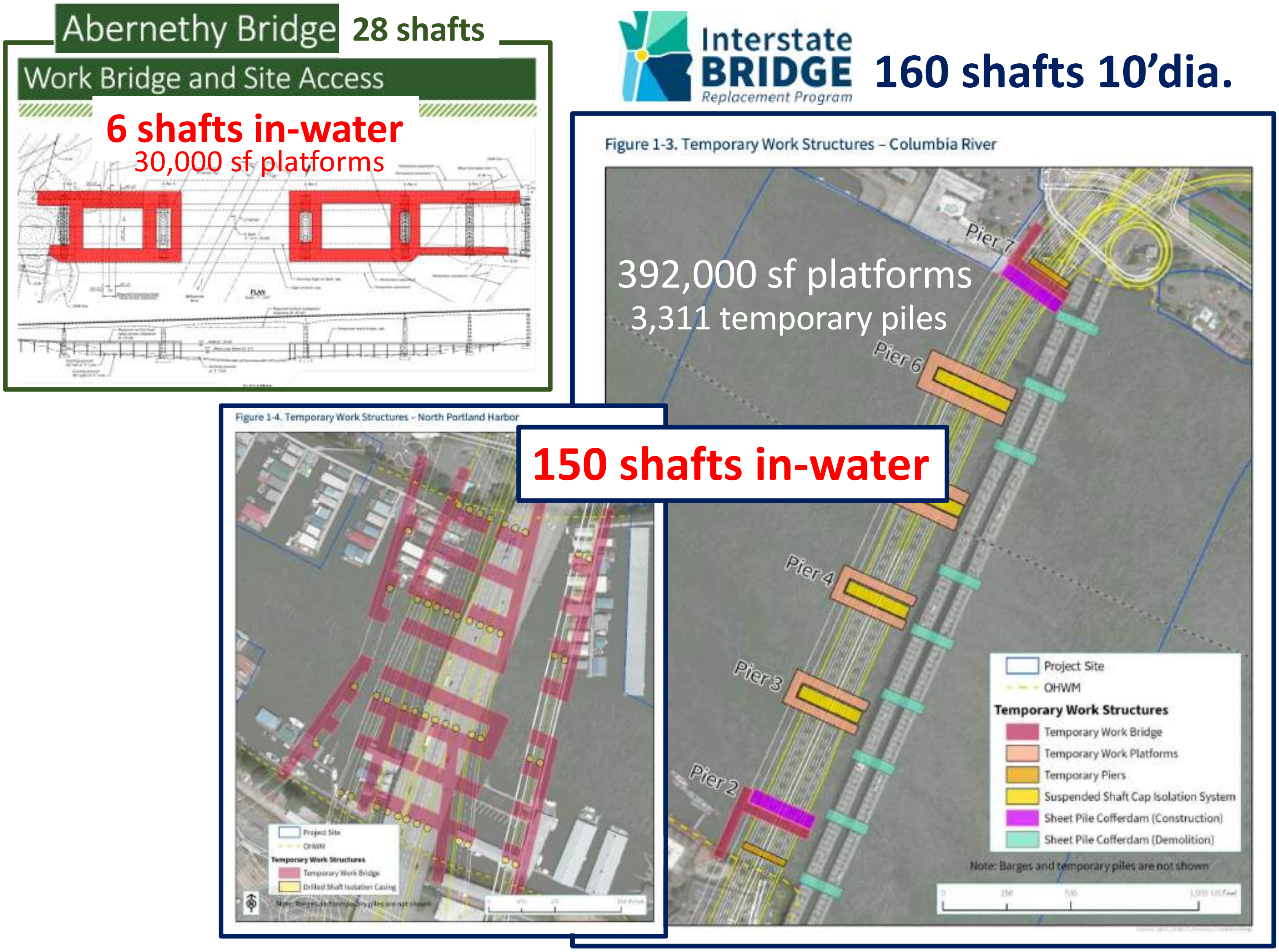
In 2012, the Columbia River Crossing estimated each shaft would cost $1.25 million ($2.5 million today) and spent $4.2 million to test a few piles and a single shaft. Malcolm Drilling Co. tried to sink a single 10-foot diameter steel casing 250 feet deep on Hayden Island. In a trade journal, Malcolm Drilling recounted its failure to sink this test shaft due to boulders.

"However, during excavation and casing installation of the 10-foot diameter shafts, an unknown layer of very dense boulders in a "fixed condition," resulted in damage to an installation tooth ring to the point that excavation to the planned shaft depth was impossible."

The IBR is hiding a serious "boulder" problem that threatens the feasibility of the Columbia River bridge design. IBR's Supplemental Environmental Impact Statement includes 26 technical reports, but a critically important geotechnical report is missing, and the IBR has offered no explanation. I filed a Public Disclosure Request and obtained IBR's "Geotechnical Data Report" dated May 2024. This report describes the encounter of many boulders and cobbles in a 200-foot layer of sediment. The report referenced boulders 106 times and cobbles 175 times.

Shockingly, the IBR has fraudulently disqualified an immersed tunnel alternative that would eliminate the need for drilled shafts. Similar to a floating bridge, an immersed tunnel is supported by displacing its weight, according to Archimedes' principle. This design is faster to build, could potentially save $1 billion associated with drilled shafts, and would also be more earthquake-resilient than a foundation based on drilled shafts.

Bob Ortblad MSCE, MBA
Seattle


Abernethy Bridge 28 shafts
Work Bridge and Site Access
6 shafts in-water
30,000 sf platforms
Interstate BRIDGE Replacement Program
160 shafts 10'dia.
Figure 1-3. Temporary Work Structures – Columbia River
392,000 sf platforms
3,311 temporary piles
Pier 7
Pier 6
Pier 4
Pier 3
Pier 2
Project Site
OHWM
Temporary Work Structures
Temporary Work Bridge
Temporary Work Platforms
Temporary Piers
Suspended Shaft Cap Isolation System
Sheet Pile Cofferdam (Construction)
Sheet Pile Cofferdam (Demolition)
Note: Barges and temporary piles are not shown
Figure 1-4. Temporary Work Structures – North Portland Harbor
150 shafts in-water
Project Site
OHWM
Temporary Work Structures
Temporary Work Bridge
Drilled Shaft Isolation Casing

MALCOLM DRILLING COMPANY PERFORMS
The Columbia River Crossing Test Program

By Alan Rasband, Malcolm Drilling Co., Inc.
and Tait McCutchan, Project Manager

Al Rasband is the Vice President of Malcolm's Northwest Division, Kent, Washington. He currently serves as the Vice President on the ADSC's Board of Directors. (Editor)

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Columbia River Bridge illustration.

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Since the planned project covered an area that boarded two states, and due to the fact that there was a significant distance from beginning to end, two of the test shafts (the 10 foot diameter and the 6 foot diameter) were located on an island on the Oregon side, with the 8 foot diameter shaft located on the Washington side. In that many of the shafts were planned to be constructed over water, the test shaft locations were selected to replicate the conditions expected to be encountered in the river. The project went out for bid in early spring. It was awarded to Max J. Kuney Construction of Spokane, Washington with the drilled shaft specialty subcontractor being ADSC Contractor Member, Malcolm Drilling Co., Inc., (MDCI), headquartered in San Francisco, California. This project was to be managed out of Malcolm's Kent, Washington office. The load test was to be performed by ADSC Associate Member, Loadtest, Inc. The CSL and Integrity testing were to be undertaken by the Washington Department of Transportation.

In May of 2012, the contract was awarded and construction began. MDCI utilized the Oscillator method of construction for the installation of the permanent and temporary casing. The

Cage with testing apparatus.

equipment of several ADSC Associate Members was used for this phase. Included were a Hans Leffer Machine Co. oscillator machine, and Liebherr's 885 and 895 heavy-duty cycle digging cranes for the excavation component.

Casing being installed.

Installation and testing of the 6 foot and 8 foot diameter shafts went without incident. However, during excavation and casing installation of the 10 foot diameter shafts, an unknown layer of very dense boulders in a "fixed condition," resulted in damage to an installation tooth ring to the point that excavation to the planned shaft depth was impossible. Excellent and prompt coordination along with partnering with the General Contractor and WSDOT created an opportunity

to arrive at a timely solution. A decision was made that required the shaft to be backfilled with gravel, and the casing removed. The tooth ring was repaired, reinforced, and installation of the shaft

It is interesting to note that the Osterberg Load Cell data indicated that this was one of the largest Osterberg Cell tests ever conducted.

was restarted within just a few days. When the obstruction was once again encountered at depth, great care, along with a combination of tooling techniques were utilized. This allowed the excavation to move past the obstruction advancing the shaft to tip elevation. The shaft was then poured successfully. It is interesting

Oscillator worked well.

to note that the Osterberg Load Cell data indicated that this was one of the largest Osterberg Cell tests ever conducted. This is of particular note as Osterberg Load Tests have been "record breakers" throughout the world for many years.

As a sidebar to this article, it is unfortunate that we report that as of this writing the project has been cancelled due to funding issues. It is hoped that the "cancellation" becomes a "postponement" and that this important project can be taken to completion.

ADSC

Geotechnical Data Report

Columbia River & North Portland Harbor Bridges

May 2024

Link to report:

https://justcrossing.org/records-requests/IBR_GDR_DRAFT1.pdf