



February 8, 2001

Anchorage

U.S. Army Corps of Engineers
Regulatory Branch
Post Office Box 3755
Seattle, Washington 98124-2255
ATTN: Jonathan Freedman, Project Manager

Boston

Washington State Department of Ecology
Shorelands and Environmental Assistance Program
3190 - 160th Avenue Southeast
Bellevue, Washington 98008-5452
ATTN: Ann Kenny, Environmental Specialist

Chicago

Denver

Re: Comments on 404/401 Permit Applications
J-4978-30 06

Fairbanks

Dear Mr. Freedman and Ms. Kenny:

This letter documents comments I made at the public hearing on January 26, 2001.

The focus of my comments pertain to design of the proposed retaining walls for the project, and the process used for independent technical review of that design process.

Jersey City

My qualifications to provide these comments are as follows. I am a Principal Geotechnical Engineer employed by Hart Crowser, Inc., of Seattle Washington. I am a Professional Engineer, registered in Washington, and have over 20 years geotechnical engineering experience in the Puget Sound region. I have been a member of the Port of Seattle's design team for the Third Runway project for the past 2-1/2 years.

Juneau

The Port of Seattle proposes to construct mechanically stabilized earth (MSE) retaining walls on the west side and north end of the new runway, to avoid relocating a high value section of Miller Creek and to limit the amount of wetland filling.

Long Beach

MSE walls are a technology that has been used for more than 30 years, and hundreds of MSE walls have been constructed in the U.S.

Portland

Seattle



The MSE walls proposed by the Port of Seattle range in height from 50 to 135 feet; there are higher MSE walls that have been built elsewhere, the technology performs well.

Prior to starting design of any walls, the Port of Seattle reviewed eight different types of retaining wall and more than 60 wall/slope combinations before selecting the proposed MSE wall configuration.

- ▶ The evaluation of alternatives was independently reviewed by Professional Engineers at Shannon & Wilson Inc., a highly regarded local engineering firm that is not part of the Port's Third Runway design team.
- ▶ Shannon & Wilson concluded that the proposed MSE retaining walls are "most appropriate" for this site. Their findings are part of the public record for this permit process.

In developing design parameters for the proposed MSE walls, the Port sought and received input from well-known MSE experts at the University of Washington (UW) and the Washington State Department of Transportation (WSDOT), as well as from the private engineering community. Comments from these experts are part of the public record for this permit process.

The Port has completed extensive investigations of the wall sites, including soil and groundwater conditions and detailed seismic studies. Subsurface explorations were accomplished in more than 90 locations below the proposed walls to collect samples for laboratory tests and to measure soil properties *in situ*.

The Port of Seattle has retained the firm RECo USA to design the MSE walls for the Third Runway project.

- ▶ RECo has designed hundreds of MSE walls, including 12 that are more than 90 feet high that have been successfully constructed.
- ▶ RECo has designed two MSE walls that are as high or higher than the maximum proposed wall height at Sea-Tac, and both of these have been built and are performing well.

The proposed MSE walls are being designed in accordance with the building code developed by the American Association of State Transportation Officials.



Two engineering firms Hart Crowser and HNTB, working for the Port, have reviewed RECo's wall design calculations; and the preliminary design plans and supporting calculations have been provided to the outside reviewers at the UW and WSDOT for them to review and comment on as well. RECo's design is an iterative process with improvements being made based on input from other members of the design team.

An August 9, 1999, Ecology memo on the proposed MSE walls said specifically:

"The individuals identified to conduct subsequent static and dynamic analysis of the wall and of the detailing of the stabilization system are acknowledged experts in their respective fields."

That Ecology memo is part of the public record for this project.

In addition to the above, the Port has retained three internationally recognized engineers to form a special Technical Review Board. The Board members include:

- ▶ Dr. James K. Mitchell, P.E., is Distinguished Professor at the Virginia Polytechnic University and former Chairman of the Civil Engineering Department at the University of California at Berkeley. Professor Mitchell is an expert in soil behavior and embankment construction.
- ▶ Dr. I.M. Idriss, P.E., is Professor of Civil Engineering at the University of California at Davis. Professor Idriss is a recognized authority on earthquake engineering and on seismic performance of embankments and MSE walls.
- ▶ Dr. Barry Christopher, P.E., is an independent geotechnical engineering consultant and internationally recognized expert in MSE wall design, construction, and performance.

The Technical Review Board has been given all the engineering data, design reports, results of calculations, and wall plans to review and comment on. The Board has met with the Port's design team to discuss the investigations and design work accomplished to date, and to ask questions and make any suggestions for the design team's further consideration.

The Board members have submitted a letter to the Corps of Engineers and Ecology, that will become part of the public record for this permit process, because they were unable to attend as a group and speak at the public hearing. In part, the Board's statement included the following comments that I read at the hearing on January 26, 2001.



"The Board is in general agreement with the design approaches and methodology employed by the design team on the third runway project. The Board further concludes that the embankment and MSE wall investigations and technical analyses being conducted on the project are at an appropriate level of detail and thoroughness deemed necessary for a project of this complexity and are in compliance with current engineering and construction industry practice.

Each of the Board's suggestions has been, or is being, investigated and results to date support the original design. The Review Board will continue to review the design and construction approaches to the project and will provide further suggestions, if warranted, based on their in-depth experience."

Thank you for the opportunity to have spoken at the public hearing, and to submit this letter to describe the design and independent technical review process that has been used by the Port for the proposed MSE walls.

Sincerely,

HART CROWSER, INC.

MICHAEL BAILEY, P.E.

Senior Principal Engineer

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