Appendix H

Dock Assessment by Peratrovich, Nottingham & Drage

Peratrovich, Nottingham & Drage, Inc.
Engineering Consultants
811 First Avenue, Suite 260 • Seattle, WA 98104 • (206) 624-1387 • Fax (206) 624-1388 • E-Mail: mail@pndsea.com

RECEIVED
MAY 23 2000
BY:

May 18, 2000

PN&D 00428

Mr. John Arum
Ziontz, Chestnut, Varnell, Berley & Slonim
Fourth and Blanchard Building
2101 Fourth Avenue, Suite 1230
Seattle, Washington 98121-2331
(206) 448-1230 Facsimile: (206) 448-0962

RECEIVED
MAY 18 2000
ZIONTZ, CHESTNUT, VARNELL
BERLEY & SLONIM

RE: Northwest Aggregate Dock – Site Investigation

Dear Mr. Arum:

At your request the following letter report summarizes our evaluation of the Northwest Aggregate Dock located on Maury Island. As requested, PN&D conducted a field investigation of the facility, May 4, 2000 between the times of 8:30 a.m. and 11:00 a.m. at a lower tide. There was a slight breeze and the day was overcast. Our site visit only included visual observations with no exploratory work, underwater inspection or materials testing. Visual observations were made from the low walk area and the conveyor access ramp. With us we had a copy of the Reid Middleton (RMI) report dated February 29, 2000 – File No. 26-99-042-001-01 (See Appendix A).

Purpose of Investigation

We understood that you desired us to use the RMI report as a base of comparison and determine if we agreed with its findings and observations. Also, you requested that if possible, based on the information you had provided (Chapter 2 of the DEIS, see Appendix B), could we assess the structural capacity of the systems and provide any recommendations on operations and life of the structure.

Field Description and Observations

Our field observations of the site confirmed the description of the structure and components described on pages 2 and 3 of the RMI report with one exception. When describing the timber fender piles on page 3 we observed some spacing as close as 6 or 7 feet which was half of a bent spacing. You can see this in picture 17, Appendix C.

We agree with the field observations and assessment of the facility conditions presented on pages 3 and 4 of the RMI report with the following modifications.

1. The conveyor truss and components, although not severely corroded, are in need of complete overhaul as rollers and belts are no longer present and reattachment and installation would require all new components to insure operational use for the volume of material proposed. It is also our understanding that a covered conveyor system may be required for operations. In this case, modifications to the conveyor are required and lateral loads due to new wind area will increase. This change to a covered conveyor makes the lateral bracing components a much more important operational component.

2. The fender and mooring dolphins require replacement or mooring capacity upgrades.

We agree with the estimated structural work required to make the conveyor support, load-out tower, and dock structures safe and operable for the proposed use presented on page 4 of the RMI report with the following modifications or additions.

3. Install a new fendering system consistent with the proposed use that upgrades or replaces the existing fender piles, fender dolphins and mooring dolphins. The RMI report does not address the need to accommodate the proposed new berthing requirements of the facility. It addressed the condition of the facility and referenced the need to review the future use of the moorage systems. (See page 7 of the RMI report.) Our calculations show that for a barge, approximately 80 feet wide by 240 feet long, the existing fender piles are inadequate. Since the existing conditions of the comprehensive mooring systems is in such disrepair, we recommend total replacement, modification or upgrades for the extended future use.

Review of RMI Study Question Responses

Study Question 1. Approximately haw many pilings would need to be replaced on the dock, fenders, and dolphins to make the dock capable of operation as proposed by the applicant?

We agree that the discussion presented on pages 5 and 6 of the RMI report is representative for the site. However, based on our visual observation of the dolphins swaying in the light wind and waves present during our inspection, we do not feel that there is any structural capacity remaining in the fender or mooring dolphins. Therefore we would modify the discussion on page 6 of the RMI report and emphasize the following.

The existing timber fender piles located in front of the pier are marginal for the proposed use and mooring demands. (See calculations in Appendix D.) The calculations show that it requires approximately 7 piles, all equally activated, to resist the moorage loads of an unloaded barge. Depending on the boat operators abilities and the wave and wind in the area, it is highly unlikely that this type of berthing is possible. It is more likely that the barge will try and berth on a fender dolphin first and then move into position. In that case the existing fender dolphins are in need of replacement.

We recommend that a comprehensive fender and moorage system be provided which includes replacement of the fender and mooring dolphins and a pier protecting element. Although we agree that steel piles can be inserted into the dolphins as described on page 6 of the RMI report, we feel that the existing condition of the existing piles have deteriorated to a condition that they would last for only a short time before they would need replacement. It is our opinion that there would be less impact on the area if the existing dolphins and pier fenders were demolished and a modern fender face added. This could take several different forms in final design based on desired mooring demands and meeting construction requirements. It is important to note, that from this recommendation, the piles for the Fender System and Dolphins (126 piles), identified in the Pile Summary on page 6 of the RMI report will be totally removed and replaced with an estimated number of piles of between 18 and 36 piles.

Study Question 2. Assuming relatively constant use, approximately how often would repairs need to be conducted and what would be he extent of those repairs?

We agree that the discussion provided in paragraphs 1 and 2 on page 7 of the RMI report is representative for this site. However, as previously stated in Study Question 1., it is our opinion the fender and mooring system needs replacement now. The discussion in paragraph 3 on page 7 of the RMI report focuses mostly on a discussion for the conveyor trestle and pier structure which we agree with. However it only references the fender dolphins and mooring dolphins in a parenthesis note alluding to future mooring requirements.

Study Question 3. Over the long run, would replacement of the existing dock with a new, low-maintenance dock result in less in-water work?

We do not agree with the response by RMI for this question. This is mostly due to the emphasis, as we mentioned in question 1 and 2, that a new fender and mooring system is required now. By installing a new dolphin and fender system, it is our opinion that repeat maintenance of the old existing fendering system, which RMI proposes to incrementally replace and repair, will be reduced and thereby have less impact as a whole. It will also reduce the effort required to implement future maintenance items, the majority of construction can be accomplished in a single period.

Structural Capacity Checks

Main Conveyor Trestle

A preliminary stress check for a conveyor load of 625 pounds a linear foot was conducted. This was established by assuming 40,000 tons of product moved per day. This was taken from the DEIS predicted production rate. Using appropriate design values for the condition of the existing materials the vertical load capacity is adequate. We recommend the repairs proposed by RMI on page 4 and as modified by PN&D in this letter be implemented to provide a safe and operating facility.

Pier

Based on our calculations and assumption of various barges, we do not feel the moorage and berthing system is adequate – even if it were new construction – to handle the extended operations for the proposed use described in the DEIS and as reviewed in our calculations. We recommend a new comprehensive moorage system be installed.

Mooring Dolphins

Visual observation of the dolphins from the center pier indicated they were swaying from the light wind and wave that was present during our inspection. We conclude that these elements have little to no structural capacity left for mooring and berthing operations.

This concludes our current directed task. If you desire any additional information, please call at any time.

Sincerely,

Peratrovich, Nottingham & Drage, Inc.

David Pierce

David Pierce, P.E., S.E.
Principal/Senior Engineer V

DAVID M. PIERCE
STATE OF WASHINGTON
24841
REGISTERED
PROFESSIONAL ENGINEER
5/18/00
EXPIRES 2/30/00
David M. Pierce