



Grants Pass * Jacksonville * Medford, OR

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- Engineers/Scientists, LLC

MEMO-122217-01

To: Gary Dehlinger
Manager, Port of Brookings
cc: Bill Kerschke, Environmental Specialist
FEMA Region X
130 228th Street SW, Bothell, WA 98021
From: Jack Akin
EMC-Engineers/Scientists, LLC
RE: Completion of Pile & Dock Repair, Port of Brookings

Introduction

On Thursday, June 20th, 2019, Jack Akin of EMC-Engineers/Scientists, LLC (EMC), at the request of Gary Dehlinger, Port of Brookings Manager, completed the final inspection of the installations and repair via the FEMA-approved project entitled ST-307 Pilings and Boarding Ramps, Declaration No. 4258, PA ID 015 UIZ5Q. The project was authorized under the October 26, 2018, USACE Permit No. NWP-1999-381/6.

Discoveries and Revisions Within the FEMA/OEM Authorized Scope of Work

The Project Description in the Joint Permit Application and stated Scope of Work submitted to FEMA proposed to remove and replace about 92 fallen piles (12" diameter, 30' - 60' long), and to repair the damaged boarding docks (ramps), all of which are located within the Sport Basin.

During the work it was discovered that the removed piles were actually 45' feet in length or less, and that many were only 30' to 32' feet in length. Since the point of fixity had been determined via other geotechnical studies at nearby locations at the Port to be at a depth of 20 – 25' below mudline, 45' foot long piles would be unstable, because these piles could only reach 10' – 15' depths into the basin mudline. As a result, excessive lateral force during storm surge caused sheer and tensile stresses on the dock systems (hoops and walers). Walers (wood structural members bolted and fixed to pile-anchoring steel piles) had to be replaced to provide adequate strength to new dock/pile systems.

In total, the engineer-of-record (EMC) determined that 84, rather than 92, of these new, coated and dock system reinforced pile/hoop and waler-repaired systems would be necessary to provide adequate factor of safety for the Sport Basin docks.



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Photographs

Photos were taken throughout the project, and probably provide the reviewer with the best description of operations and completion.



Trucks delivering pipe and harnesses (hoops) arrived in January, staged and off-loaded at the Port north parking lot as shown. Third photo from the left shows the derrick used to remove old piles, and place and drive new piles.



Old piles, as removed, were staged on the 30' X 60' modular barge, to be off-loaded by the derrick onto the temporary storage location on the jetty separating the Chetco River from the Port of Brookings Sport Basin.



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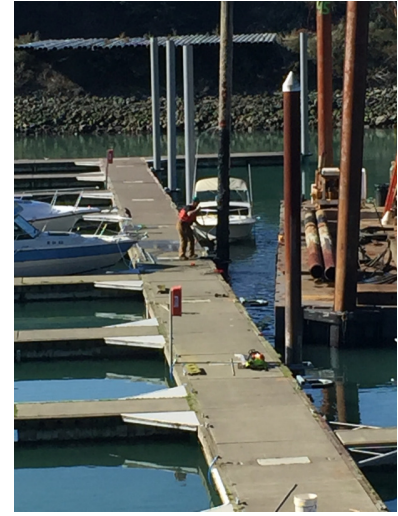
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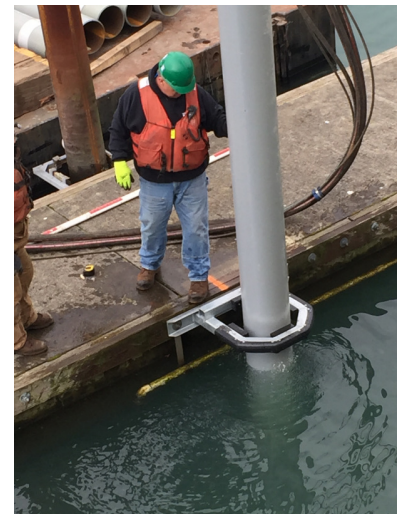
Walers (wood), hoops

Vibrating Hammer

Walers (wood)



Old pile systems (30' – 45', uncoated steel piles, worn hoops and split and splintering dock walers were removed, and new piles placed via derrick and vibrating hammer (see center photo). As old piles were removed, docks were held stationary and walers marked. As seen new piles are gray-coated.



Hoops were installed through dock walers as shown. Thence piles were aligned and driven via vibratory hammer. Vibration patterns were mild, as seen in the RHS photo above.



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Walers were mostly repaired in place but in some cases were removed and repaired at Port of Brookings Harbor boatyard. Piles in-place and coned were measured by the engineer-of-record, and noted to be well aligned vertically, and at even height about 21 feet above tops of hoops. Photo lower-center (looking southward from the launch ramp approach, on 6/20/19) shows the Sport Basin, with all new piles and boarding ramp docks in place.

Sincerely

Jack (John) Akin, MS, PE, IC, HMS, CAI
EMC-Engineers/Scientists, LLC

