



TO: Construction / Maintenance Committee  
- Steve Reed  
- Reed Geisreiter

FROM: Holland MacLaurie, Port Director  
Blake Anderson, Harbormaster  
Carl Wulf, Facilities Maintenance and Engineering Manager

DATE: November 6, 2023

SUBJECT: Review of Proposal to Purchase a Floating Barge

## BACKGROUND

The Port District maintains approximately 700 piles to support its docks and piers. Each year, the Port District makes significant investments through its Capital Improvement Program (CIP) to support this critical marine infrastructure and ensure upkeep and operability of the harbor.

Over the last five years, the Port District has performed 3 large-scale pile repair and replacement projects, in which 204 piles were replaced at a total cost of approximately \$3,591,482 (of which \$1,750,000 was financed in 2018, with loan repayment occurring in 2033). A significant number of piles remain slated for future replacement, including 281 piles that predate the 2011 tsunami repair work. Staff estimates that a minimum funding contribution of approximately \$5 million dollars will be required over the next five-year period to continue this ongoing work.

Historically, the Port District has been successful in allocating the funding necessary to carry out critical piling infrastructure improvement projects. However, the continuing rise in marine-related construction costs<sup>1</sup> warrants the District's exploration of alternative repair methods, including the feasibility of performing the pile repair and replacement work with in-house crews and equipment.

To achieve future cost savings and maximize the utility authorized under the Port District's Regional General Permit (RGP)<sup>2</sup>, staff has researched the practicality of purchasing a 60' x 40' x 5' Flexifloat spud barge to conduct in-house pile replacement work.

## ANALYSIS

Based on the research performed by staff, a list of general barge specifications and associated equipment costs has been developed for Committee review and consideration. The size of the

---

<sup>1</sup> Historical pile replacement costs include, 2018: 70 piles replaced for \$869,714, 2019: 80 piles replaced for \$1,493,523, 2023: 51 piles replaced for \$1,200,000.

<sup>2</sup> The Port District's RGP was issued in 2022, and authorizes routine maintenance activities within Santa Cruz Harbor over a five-year period. The range of maintenance, repair, and rehabilitation activities included as part of the RGP is broad, but allows for as-needed maintenance and repair of existing facilities, including, but not limited to docks, brow piers, pilings, and shoreline stabilization, including seawalls. The RGP does not permit annual maintenance dredging activities.

proposed Flexifloat spud barge is adequate to safely support the Port District's 50-ton Linkbelt crane and be maneuvered by the Port District's workboat, *Big Red*.

<b>FLEXIFLOAT SPUD BARGE</b>		
<b>Qty.</b>	<b>Equipment</b>	<b>Cost</b>
5	40' x 10' x 5' Quadrafloats	\$322,000
2	40' x 10' x 5' Duofloats	\$80,400
2	20" Round Spudwells	\$39,000
2	20" Round x 40' Spuds	\$35,200
2	Hydraulic Spud Winches	\$32,600
1	Hydraulic Pumping Unit (diesel)	\$140,000
9	Hydraulic Hose Sections	\$6,900
8	Deck Cleats	\$4,000
N/A	Sales Tax	\$65,000
N/A	Freight (from Texas)	<u>\$38,000</u>
<b>TOTAL:</b>		<b>\$763,100</b>

<b>VIBRATORY HAMMER ATTACHMENT FOR PILE DRIVING</b>		
<b>Qty.</b>	<b>Equipment</b>	<b>Cost</b>
1	Vibratory Hammer Attachment (including Power Unit)	\$400,000
N/A	Sales Tax	<u>\$39,000</u>
<b>TOTAL:</b>		<b>\$439,000</b>

<b>OTHER ANCILLARY COSTS</b>		
<b>Qty.</b>	<b>Equipment</b>	<b>Cost</b>
1	Linkbelt 50-Ton Crane	Port District Already Owns
1	Workboat	Port District Already Owns
1	Forklift	Port District Already Owns
1	Equipment for Staging (Ramps)	\$25,000
1	Equipment for Demobilizing	\$10,000
1	4-Way Lifting Cables	\$10,000
2	Pile Lifting Slings	\$5,000
N/A	Consultant / Crew Training	<u>\$15,000</u>
<b>TOTAL:</b>		<b>\$65,000</b>

Preliminary cost estimates associated with the purchase of the spud barge (and all ancillary equipment) total approximately \$1,267,100. While the upfront investment for the Port District is significant, the purchase is anticipated to generate sufficient savings to cover its costs after the first largescale pile repair and replacement project in which the equipment is deployed.

In addition to providing flexible utility for in-house pile repair and replacement work (including emergency repair work), the barge has the potential to provide the following benefits:

- Optimize the regulatory permit authorities granted under the District's Regional General Permit.
- Assist on future construction projects, such as the West Side Seawall Replacement Project, East Side Embankment Repair Project, and Restaurant Reconstruction at 616 Atlantic Avenue.
- Revenue generation (if rented out to neighboring agencies or contractors for repair/maintenance work)
- Storm and disaster cleanup / platform for debris removal.
- Assist the dredge operation by providing the following:
  - Utility for in season and offseason repair of *Twin Lakes* and other dredge equipment.
  - Platform for hauling, inspecting, and repairing dredge pipeline.
  - Platform for fusing pipeline, which is not currently possible from *Dauntless*.
  - Ability to construct new inner-harbor dredge pipeline configurations and connection points, which would greatly improve dredge accessibility in the south harbor slips and fairways.
  - Vessel for deploying the Toyo pump (pump has not generated much interest at public auction).
  - Utilize the barge for deploying the spud anchor aboard *Twin Lakes* during swell, storm, or surge events (this is not currently possible and would provide additional security while *Twin Lakes* is in the entrance).

## DISCUSSION TOPICS

Staff will expand upon the proposed barge features, specifications and benefits, and respond to questions and receive input from the Committee. At the conclusion, staff will seek guidance from the Committee on whether there is interest in presenting this purchase proposal to the full Commission for consideration and inclusion in the FY25 budget / CIP.

ATTACHMENTS:     A. Flexifloat Spud Barge Quote



September 28, 2023

Mr. Blake Anderson  
Santa Cruz Harbor  
135 5th Avenue  
Santa Cruz, CA 95062

Dear Mr. Anderson:

Further to our telephone conversation, we are pleased to enclose our Sketch G-5309 and the following **budgetary** quotation on Flexifloat equipment.

The requested 60' x 40' x 5' spud barge shown on Sketch G-5309 will safely support a 50-ton capacity RT crane working within its rated marine limits. **SERIES S-50 EQUIPMENT** required for this assembly is itemized and quoted below:

5 Quadrafloats, 40' x 10' x 5', #5400	@	\$64,400.00 Ea	\$322,000.00
2 Duofloats, 20' x 10' x 5', #5200	@	40,200.00 Ea	80,400.00
2 Spudwells, 20" Round, #509A	@	19,500.00 Ea	39,000.00
2 Spuds, 20" Dia. x 40', #SP2040R	@	17,600.00 Ea	35,200.00
1 Hyd. Pumping Unit, 74.5 hp, #HPU-SW	@	140,000.00 Ea	140,000.00
2 Hyd. Spud Winches, w/o cable, #U35A	@	16,300.00 Ea	32,600.00
6 Hyd. Hoses, 30' length, #U100HP	@	880.00 Ea	5,280.00
3 Hyd. Hoses, 30' length, #U100LP	@	540.00 Ea	1,620.00
8 Deck Cleats, #U1	@	500.00 Ea	4,000.00

TOTAL SALE PRICE,		
F.O.B. TRUCKS, HOUSTON, TEXAS -----		\$660,100.00

This quotation is made subject to prior commitment and valid for 30 days. All prices and rates are in U.S. Dollars. A ten percent (10%) non-refundable down payment is required at time of order; the balance is due prior to shipment from our plant.

**AVAILABILITY:** Current inventories of both rental and new Flexifloat equipment are very limited. We will make every effort to meet the requirements of your project; however, we cannot guarantee availability until time of order.

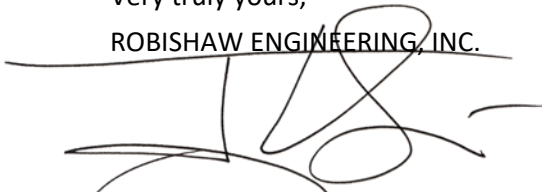
**ESTIMATED FREIGHT:** Based on rates quoted by Houston N-T Logistics, LLC, your one-way freight cost to Santa Cruz, California will be approximately \$38,000.

Mr. Blake Anderson  
Santa Cruz Harbor  
September 28, 2023  
Page 2

WARNING: The use of Flexifloat equipment requires competent personnel and the application of engineering principles. The improper use, operation, modification, maintenance or repair of Flexifloat equipment can be dangerous and result in property damage, injury or death. Contact Robishaw Engineering or other qualified professional prior to use. Robishaw offers its engineering services free of charge to all Flexifloat users. Equipment used on or with Flexifloat barges must have the manufacturer's approval for use in marine applications.

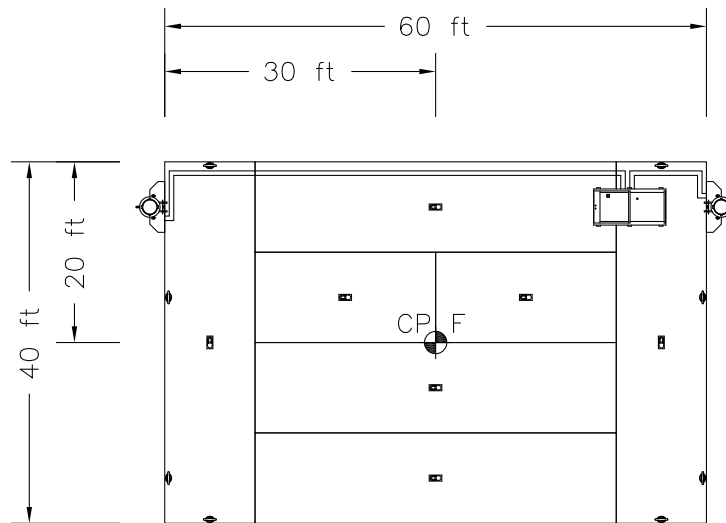
Thank you for your interest in **Flexifloat Systems** and the opportunity to submit this quotation.

Very truly yours,  
ROBISHAW ENGINEERING, INC.



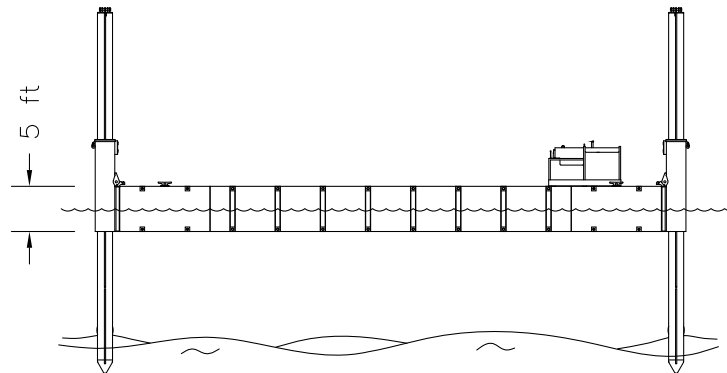
Jorge L. Sesin, P.E.

Encl.



Buoyancy Characteristics	
Deck Load (lbs.)	Draft (in.)
16,100	16
66,000	20
115,900	24
165,800	28
215,800	32

\*fresh water @ 62.4 lbs/ft<sup>3</sup>



CP – Centerpin of Machine  
F – Center of Flotation

#### Series S-50 Equipment

- 5 Quadrafloats, 40' x 10' x 5'
- 2 Duofloats, 40' x 10' x 5'
- 2 Spudwells, 20" round
- 2 Spuds, 20" rd. x 40'
- 2 Hydraulic Spud Winches, U-35
- 1 Hyd. Pumping Unit, diesel
- 6 Hyd. Hose Sections (HP), 30'
- 3 Hyd. Hose Sections (LP), 30'
- 8 Deck Cleats

**WARNING:** The use of Flexifloat equipment requires competent personnel and the application of engineering principles. The improper use, operation, modification, maintenance or repair of Flexifloat equipment can be dangerous and result in property damage, injury or death. Contact Robishaw Engineering, Inc. (REI) or other qualified professional for assistance prior to use. REI offers its engineering services free of charge to all Flexifloat users. Equipment used on or with Flexifloat barges must have the manufacturer's approval for use in marine applications.

#### PROPERTY OF ROBISHAW ENGINEERING, INC.

This drawing is confidential and contains trade secrets and other information proprietary to us. Disclosure to you is expressly conditioned upon your assent that it is not to be copied, reproduced or exhibited to other parties, without consent, but is to be used only with reference to contracts or proposals of this company. It or any copies thereof shall be returned promptly upon request.

### Robishaw Engineering, Inc.

www.flexifloat.com

Houston, Texas

800.877.1706

Flexifloat Spud Barge Assembly

DRAWN: MDM

DATE: 05/20/08

SKETCH NO: G-5309