Preface

2007: Port of Redwood City Ferry Terminal Locational Analysis, Environmental Assessment, & Conceptual Design

In 2007, the Water Transit Authority and the Port of Redwood City completed an evaluation of three potential ferry locations to determine if there were any issues that made either site impractical. This report is called the "Port of Redwood City Ferry Terminal Locational Analysis, Environmental Assessment and Conceptual Design" (Report). The Report identified which of the three sites was most optimal for a ferry service. It also performed a preliminary review to determine if there were any significant planning, legal, operational or environmental obstacles preventing the use of the most optimal location. The Report did not evaluate the feasibility of ferry service, which is typically done through a financial feasibility study (see below).

While the Report included environmental assessments, it did not include an Environmental Impact Report (EIR). A Biological Resources Assessment and Preliminary Wake Wash Impact Analysis were prepared to identify potential major obstacles in any of the three potential ferry locations. An EIR is an in-depth document that is required as part of the California Environmental Quality Act to identify potential significant adverse environmental impacts and propose mitigations or alternatives to reduce the impacts of a potential project. While an EIR was not included in the 2007 Report, the Report identified the need to prepare one in future analysis.

2019: Financial Feasibility Study and Cost Benefit & Economic Impact Analyses

In February of 2019, the City initiated a Financial Feasibility Study and Cost Benefit & Economic Impact Analyses (Study). The goal of this Study is to understand if a ferry service to and from Redwood City is viable based on ridership. In other words, it seeks to answer whether there will be enough riders. Additionally, the Study will estimate operational costs, capital costs, and look to see if there are added societal benefits for providing a ferry service. If the Study shows potential ridership is significant enough, then City Council and the Port Commission will consider how to proceed with the next step in pursuing a ferry service. Next steps may include a Business Plan (required by the San Mateo County Transportation Authority) and a Conceptual Design, followed by an EIR.

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July 11, 2007

Michael Fajans
CHS Consulting Group
130 Sutter Street, Suite 468
San Francisco, CA

Subject: Conceptual Design for the WTA Ferry Terminal at the Port of Redwood City
M&N File No: 6192

Dear Mr. Fajans:

This report describes Moffatt & Nichol's work on the Conceptual Design for the WTA Ferry Terminal at the Port of Redwood City. The Port of Redwood City is considering construction of this ferry terminal, and Moffatt & Nichol has been retained by CHS Consulting Group to perform a conceptual design for the terminal. Our work focused on the following main tasks:

- Selection of a ferry terminal site.
- Concept level plans for the ferry terminal.
- Concept level cost estimate for construction of the ferry terminal.

Selection of Ferry Terminal Site

Initially, three sites were considered for the proposed ferry terminal. These sites are shown on Figure 1. All of the sites considered are on properties owned by the Port of Redwood City. Two of the sites were quite far up the Redwood Creek Channel with one near the center of the commercial port and the other at the western end of the commercial port. The third site (the site selected) is located on Westpoint Slough near where it joins Redwood Creek. The terminal would be on property currently used by an aggregate company. The selected ferry terminal site is shown on Figure 2. A number of issues were considered in selecting this site. The main issues are discussed below.

Figure 1: Sites Considered

Figure 2: Site Selected for Ferry Terminal

Proximity to San Francisco Bay

As ferries move through the shipping channel, they pass between Bair Island and Greco Island. Ship (and ferry) wakes are potentially damaging to the sensitive wetlands habitats at these islands. In order to limit wake damage to the islands, ferry speed in the channel will be restricted. The speed restriction directly affects travel time in the channel. The selected site at Westpoint Slough is the least distance from open water of all sites considered and results in the minimum ferry travel time. The other sites considered would require five or more minutes of additional travel time each way, significantly impacting the round trip travel times to other destinations.

Location with respect to Port of Redwood City

The Port of Redwood City ship berths are located about 3,000 feet west of the proposed ferry terminal site. Ferry turning movements will not occur in the shipping lane and impacts to shipping will be minimal at Westpoint Slough. Both other sites within the commercial port would have more interference issues with commercial traffic.

Water depth

The WTA vessels are shallow draft – approximately 5 to 6 feet. The terminal float is expected to draw about 8 feet of water. To ensure adequate under keel clearance during extreme low tide conditions, the channel should have a minimum water depth of at least -10 MLLW. The ferry float should have a water depth of at least -12 MLLW due to its deeper draft. The water depth requirements for Westpoint Slough are shown on Figure 3.

The ferry route to the terminal is via Redwood Creek Channel and for a short distance through Westpoint Slough. Redwood Creek is the deepwater shipping channel and consequently regularly dredged. Therefore, both locations within the commercial port would have no water depth or dredging issues to consider. Westpoint Slough, however, is not generally dredged. The most recent bathymetric information in Westpoint Slough comes from drawings dated 1995. Based on discussions with Port personnel, the channel appears to be fairly stable and not subject to significant deposition. For this concept study, the 1995 bathymetry was used. The dredging requirement for construction of a ferry terminal is estimated to be 17,000 cubic yards based on the 1995 channel contours. This quantity must be verified by a future bathymetric survey during design of the ferry terminal.

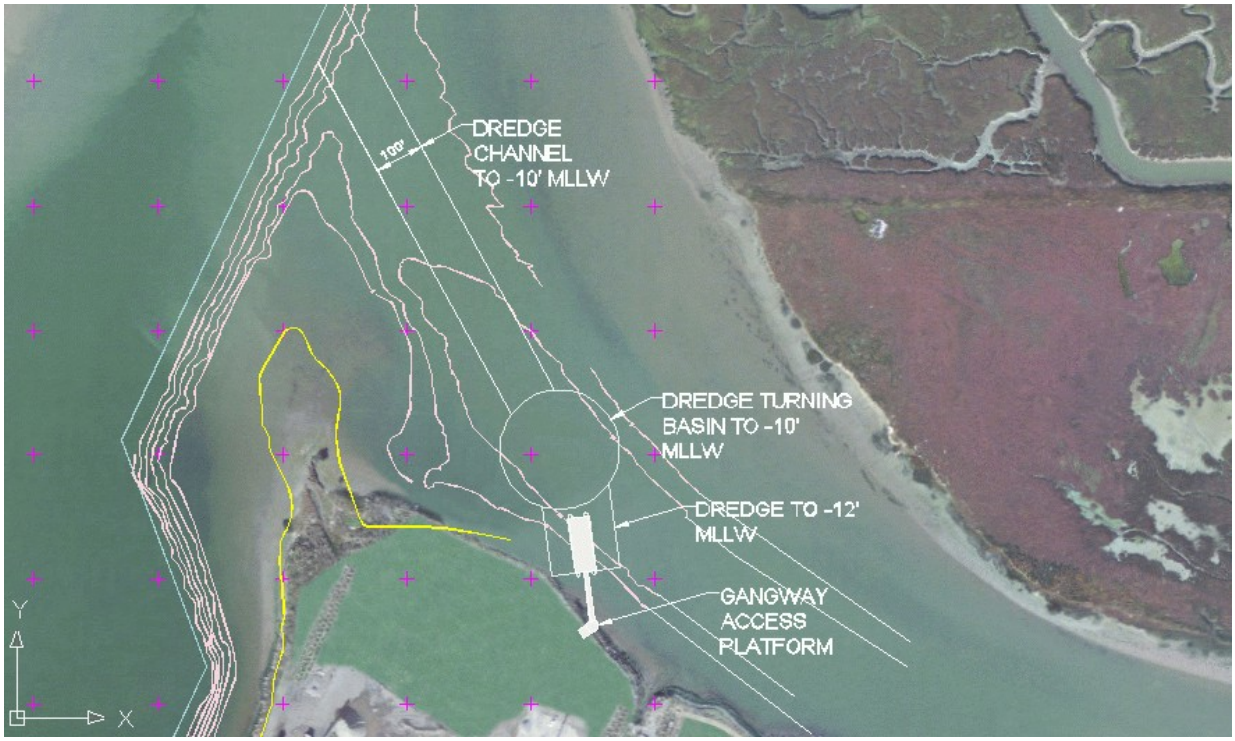


Figure 3: Required Dredging Depths

Wetlands

The two sites in the commercial port are not impacted by wetlands issues other than transiting up the shipping channel as discussed above. However, a constraint on the location of the Westpoint Slough terminal is existing wetlands (Figure 4). Dredging close to the wetlands poses potential damage due to loss of the natural grade and consequent water intrusion. Also, ferry wakes may tend to erode the shoreline. The proposed terminal location is situated to minimize these impacts.

Figure 4: Location of wetlands in proximity to Westpoint Slough ferry terminal site

Backlands and Parking

The availability and ease of access to sufficient land for patron parking is an important consideration. Both sites within the commercial port have more limited land available for parking compared to the Westpoint Slough site. However, the commercial port sites are closer to normal traffic routes. That said, land availability became the overriding issue.

Concept Level Plans

Two terminal layouts were developed for the Westpoint Slough site. These are shown on Figures 5 and 6. Figure 5 illustrates near term requirements with parking for approximately 254 vehicles. Figure 6 shows full build-out with parking for approximately 504 vehicles.

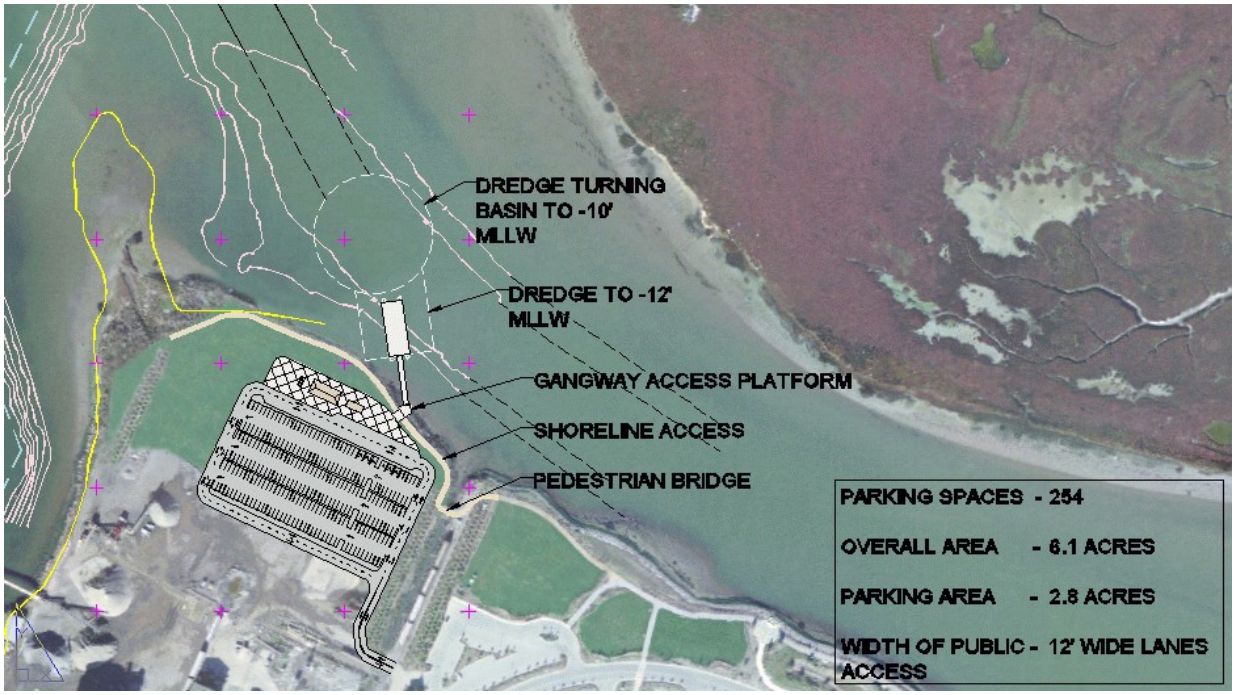


Figure 5: Terminal Layout for Near Term Requirements (254 parking stalls)

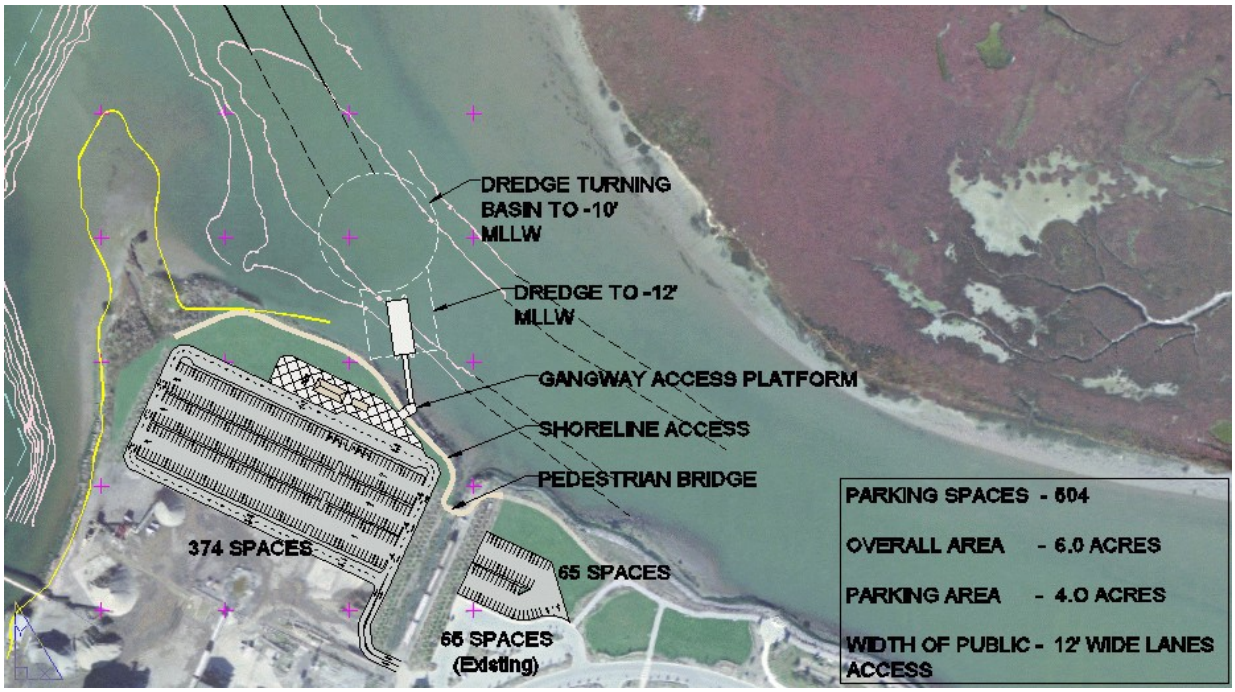


Figure 6: Full Build-Out Terminal Layout (504 parking stalls)

The ferry terminal includes the following features. These features are described in more detail below:

- Float
- Gangway
- Gangway Access Platform
- Backlands structures (intermediate and full build-out parking, and Bay Trail)

The ferry terminal consists of a gangway access platform at the shore end, a concrete float, and a gangway linking the platform to the float. Layout and elevation views of these components are shown in Appendix A.

Float

The float is constructed of concrete with a length of 110 ft and a beam of 42 ft. Due to the water depth at the ferry terminal site, the range of tides at Redwood City, and the proximity to land, it is recommended that guide piles moor the float, rather than mooring chains. At this conceptual level of design, it is assumed that four 42" steel guide piles would be required to moor the float. Analyses were not done to determine mooring pile length. The float guide piles are assumed to be 100 feet long. To maintain a float freeboard of 3 ft it is anticipated that a draft of 8 ft will be required, giving a total float depth of 11 ft. A section through the float is shown in Figure A.3 of Appendix A.

Gangway

The gangway is assumed to be 92 ft long with a clear width of 10 ft. This length will satisfy ADA access requirements for the full expected tide range. A canopy will be constructed over the gangway to provide shelter.

Gangway Access Platform

A small pier type structure referred to here as the gangway access platform will transition passengers from land to the gangway. The gangway access platform will be a cast-in-place deck structure supported by six 24" octagonal precast concrete piles. A canopy will also be constructed on the platform. Site dredging and demolition will be completed prior to construction of the gangway access platform. The dredging will be required as previously discussed. Demolition includes removal of an existing concrete wharf and several steel barge type structures.

Backlands Structures

The backlands includes parking, a section of the Bay Trail and several small structures. Two parking configurations were considered – interim and full build-out. The interim configuration would provide parking for approximately 254 vehicles. This is sufficient for the initial projected traffic volumes. The full build-out would provide parking for approximately 504 vehicles. The site layouts (Figures 5 and 6) show the interim and full build-out parking. In Figure 6, the two 65 space parking areas are situated on Pacific Shores Center property. The rest of the parking stalls are all contained within the area currently occupied by the aggregate company.

The Bay Trail will be extended, as shown in Figures 5 and 6.

Access to the ferry terminal site will be provided by the existing Seaport Boulevard. This road currently provides adequate access to the commercial port, the Pacific Shores Center and the aggregate site that is being proposed as the Westpoint Slough Ferry Terminal site (Figure 7). As shown on Figure 8, an intersection exists that divides Seaport Boulevard into a two-lane road for access to the commercial port, and a four-lane road for traffic towards the Pacific Shores Center. Traffic for the Westpoint Slough ferry terminal would have to travel through the four-lane road towards Pacific Shores, and then enter the terminal site via the existing triangular parking lot. This route is shown on Figure 9 and marked by arrows. A bottleneck might develop at the intersection shown on Figure 8 when increased traffic from the ferry terminal would need to converge with commercial traffic from the port. Signaling at this intersection might need to be re-considered.

Figure 7: General View of Seaport Blvd and access to Westpoint Slough ferry terminal

Figure 8: Close-up of intersection on Seaport Boulevard

Figure 9: Access to Westpoint Slough ferry terminal

Concept Level Cost Estimate

A concept level cost estimate for the construction of the ferry terminal as described herein is summarized in the table below.

Summary Cost Estimate

	SUMMARY		Interim		Full Build Out
A	**Ferry Terminal**				
	Mob / Demob		$533,513		$533,513
	Demolition of Existing Structures		$300,000		$300,000
	Float		$3,744,800		$3,744,800
	Gangway Access Platform		$268,500		$268,500
	Gangway		$370,000		$370,000
	Dredging		$612,000		$612,000
	Slope Protection		$39,830		$39,830
	Subtotal		$5,335,130		$5,335,130
	25% Design Contingency		$1,333,783		$1,333,783
	Subtotal		$7,202,426		$7,202,426
	10% Construction Contingency		$720,243		$720,243
	Grand Total w/ Contingencies		**$7,922,668**		**$7,922,668**
	Construction Management (6%)		$475,360		$475,360
	Design Fee (12%)		$950,720		$950,720
	Environmental and Permitting (10%)		$792,267		$792,267
	Total Ferry Terminal		**$10,141,015**		**$10,141,015**
B	**Parking Lot**				
	Parking Lot		$1,617,688		$1,895,188
	25% Design Contingency		$404,422		$473,797
	Subtotal		$2,022,110		$2,368,985
	10% Construction Contingency		$202,211		$236,899
	Grand Total w/ Contingencies		**$2,224,321**		**$2,605,884**
	Construction Management (6%)		$133,459		$156,353
	Design Fee (12%)		$266,919		$312,706
	Environmental and Permitting (10%)		$222,432		$260,588
	Total Parking Lot		**$2,847,131**		**$3,335,531**
	Total Project Cost		**$12,988,146**		**$13,476,546**

Yours truly,

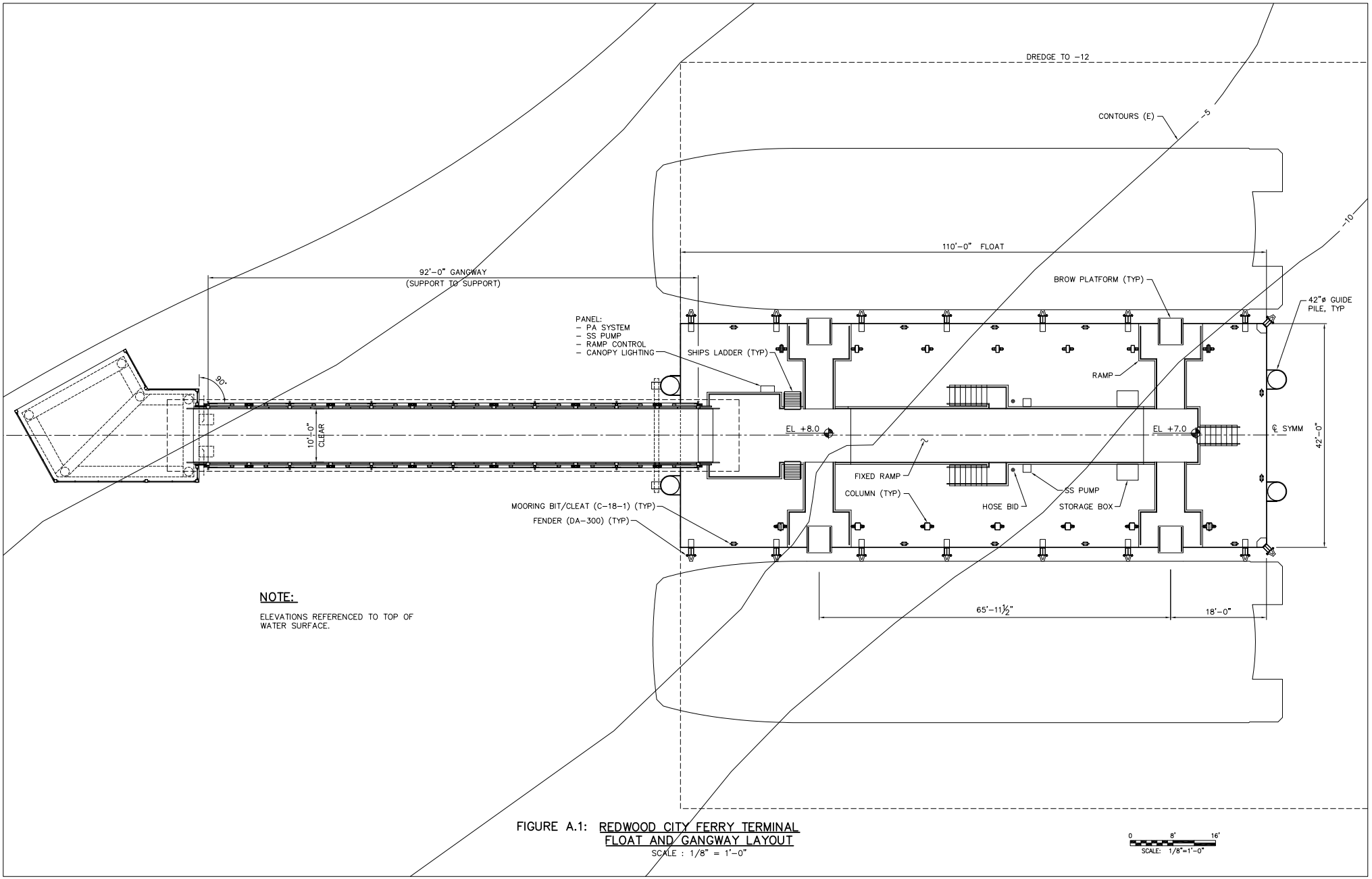
Moffatt & Nichol

Jim Brady, SE
Project Manager

Cc: Bo Jensen

Appendix A: Layout and Elevation Views of Ferry Terminal

- Figure A.1 shows the float and gangway layout,
- Figure A.2 shows an elevation of the float and gangway,
- Figure A.3 shows section views through the float and gangway.

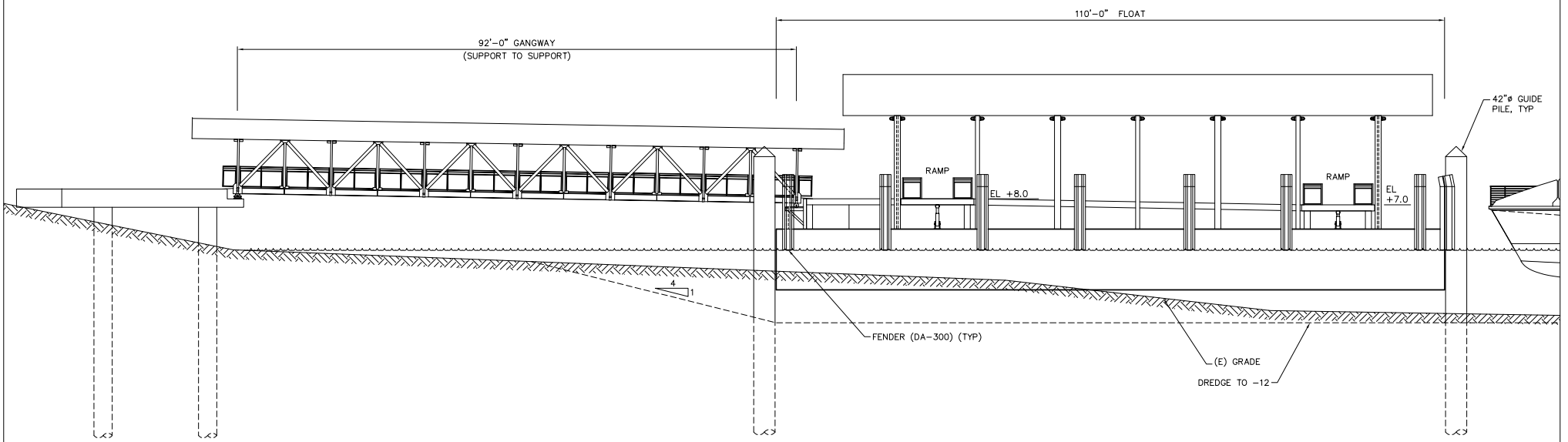


NOTE:

ELEVATIONS REFERENCED TO TOP OF WATER SURFACE.

FIGURE A.1: REDWOOD CITY FERRY TERMINAL
FLOAT AND GANGWAY LAYOUT
SCALE : 1/8" = 1'–0"

0 8' 16'
SCALE: 1/8"=1'–0"

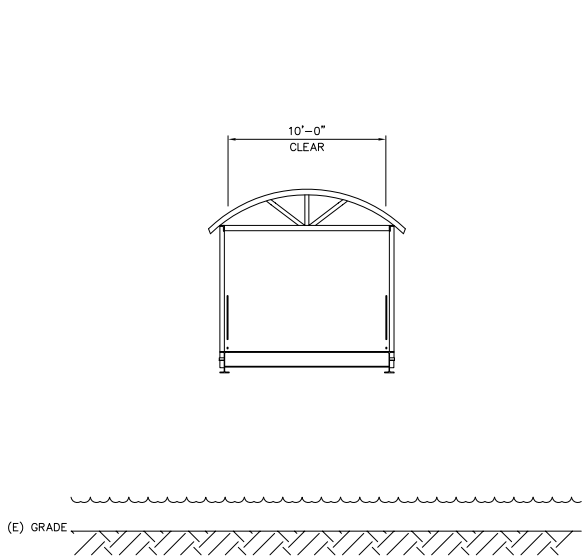


NOTE:

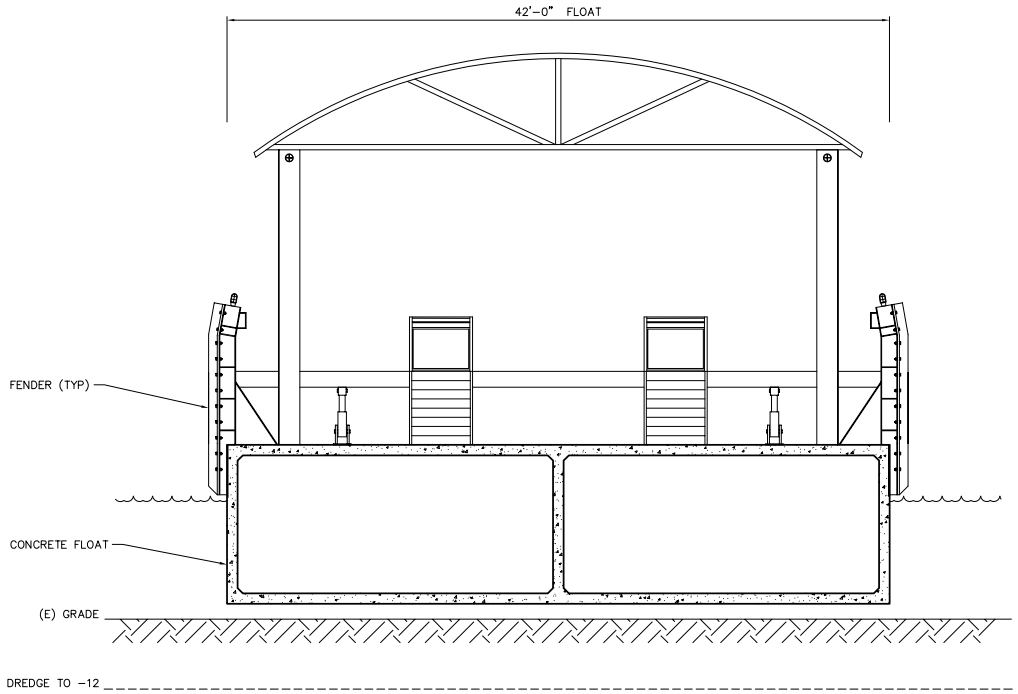
ELEVATIONS REFERENCED TO TOP OF WATER SURFACE.

FIGURE A.2: REDWOOD CITY FERRY TERMINAL
FLOAT AND GANGWAY ELEVATION
SCALE : 1/8" = 1'-0"

0 8' 16'
SCALE: 1/8"=1'-0"



SECTION THROUGH GANGWAY



SECTION THROUGH FLOAT

FIGURE A.3: REDWOOD CITY FERRY TERMINAL
FLOAT AND GANGWAY SECTIONS
SCALE : 1/4" = 1'-0"

0 4' 8'
SCALE: 1/4"=1'-0"