

MEMORANDUM

To: Nicole Bures, The Cavallari Group

From: Dilip Trivedi and Neil Nichols

Date: March 30, 2017

Subject: Alameda Shipways Project – General Description of Site Conditions
M&N Project No: 9696

A general description of the site, based on a combination of prior reports and drawings, and visual observations is presented in this memo. The site is a former shipbuilding facility along the waterfront which comprises the following, and as shown in the figure below:

- Four headhouses currently being used as office/warehouse space;
- Four large shipways or ramps that slope from the roofs of the head-houses towards the water;
- Six craneways that are flat and were used to support cranes for building ships;
- A large pile-supported welding slab between the two central craneways.





The site is underlain by original marshlands that flanked the present day Oakland Estuary. The thickness of these soft marsh deposits (Bay Mud) ranges from 50 to 80 feet¹. Because of the poor strength of the Bay Mud, all the structures were supported on piles (untreated timber), with very little fill over the original marsh deposits. There are approximately 6,000 timber piles under the deck slab.

The perimeter of the site is bounded by a steel sheetpile wall which appears to have been used as a cofferdam. The visible portion of sheetpile is severely deteriorated, however the sheetpile is assumed to be functioning as a retaining structure due to the presence of adequate water depth for the existing docks to the north and south. The sheetpile is a heavy, ball & socket Z-shape that was used at the time of construction but is not commonly used today.

Below the headhouse and shipway ramps, the timber piles terminated some distance above the original marsh deposits into a 16- to 24-inch thick concrete slab. Above the slab are concrete columns that vary in length and grade beams that support the sloping 12-inch thick concrete surface deck. The shipways have a 5% slope from the landside edge (headhouse building entrance) to the waterside end, terminating at the steel sheetpile wall at approximately low tide. The headhouses – the occupied office spaces at the landside portion of the shipway -- consist of a sloping roof deck, support columns (interior and along both edges), exterior walls, a floor deck (at craneway elevation), grade beam footings, and timber piles. The lower portion of the ramps (nearest to the water) consist of a deck supported on short columns where space allows, and is assumed to consist of a deck supported directly on piles as the deck meets the pile tops.

The craneways and welding platform consist of interior and exterior walls on a grade beam footing, supported on piles timber that extend into the original marsh deposits. Below the deck slab, they are hollow. The shipways, craneways and welding slab generally have large open spaces in each structure's interior between the deck and the foundation/ground surface.

The concrete structure shows extensive cracking and spalling of the deck, exterior walls, and exterior support columns. Based on visual inspection the structures are generally in poor condition and are not expected to meet current static or seismic loading criteria. The craneways show signs of moderate to significant amount of distress and the decks have sagged in several areas. The shipways show widespread deck damage and significant cracking of the exterior walls and columns. The lower (waterside) portion of the ramps are cracked and some areas show differential settlement and/or heave.

The 2001 geotechnical investigation found that timber piles display significant deterioration (loss of section) due to borer damage, bacteria, and fungi². Piles were also found to have lost contact with the concrete pile cap due to decay or borer damage, and settlement of the pile itself.

In the mid 1980's, numerous holes were cut through the deck of each shipway ramp and portions of the welding slab and craneways, and dredged material from nearby marinas was pumped into the voids between the slabs and grade beams. Much of the settlement appears to have occurred after the 1986 filling, and was probably caused by the increased weight of dredged material on the underlying

¹ Treadwell & Rollo, 2001. *Geotechnical Investigation, Shipways Office Building*, prepared for Alameda Real Estate Investments, Feb 2001, p.6

² Ibid., p.10.



compressible Bay Mud. A geotechnical report in 2001 indicated that existing structures are expected to settle 8 to 16 inches over 50 years³.

Summary

Given the above described conditions, the structures should not be relied upon for the proposed redevelopment. The structure is over 80 years old and the nature and extent of deterioration indicates that it has exceeded its service life. The specific deficiencies of the existing structure include:

- Structurally unsound concrete (extensive concrete distress)
- Concrete structure would not meet seismic code requirements
- Timber piles not in contact with concrete structure
- Deterioration of timber piles
- Ongoing settlement of timber piles

Retaining the original concrete structures (shipways, craneways, and welding platform) as part of the proposed project is not feasible. Demolition of the existing concrete structures is required for site development, and new foundations developed for the both the development footprint (building structures and parking lots) and the open space.

³ Treadwell & Rollo, 2001. *Geotechnical Investigation, Shipways Office Building*, prepared for Alameda Real Estate Investments, Feb 2001, p11.