

GOLDEN GATE SAUSALITO FERRY TERMINAL BOARDING FLOAT SIZE DISCUSSION

Passenger movement from the gangway onto the float includes a fixed level landing at the end of the gangway, an adjustable height boarding platform that remains level on the main area of the float, and a ramp (boarding apron) between the fixed landing and the boarding platform. Between the boarding platform and the ferries are gangplanks which can slope up or down to the door locations on the ferries. The sloped surfaces on the float that are accessible to the ferry passengers include the gangway, the boarding apron and the four gangplanks. All sloped areas are limited to a maximum slope of 1:12 (vertical : horizontal). The minimum length and beam (width) of the float was determined by a combination of ADA guidelines (U.S. Access Board, Proposed Accessibility Guidelines for Passenger Vessels, June 18, 2013) and operational considerations. The approach used to determine the minimum length and beam are discussed below.

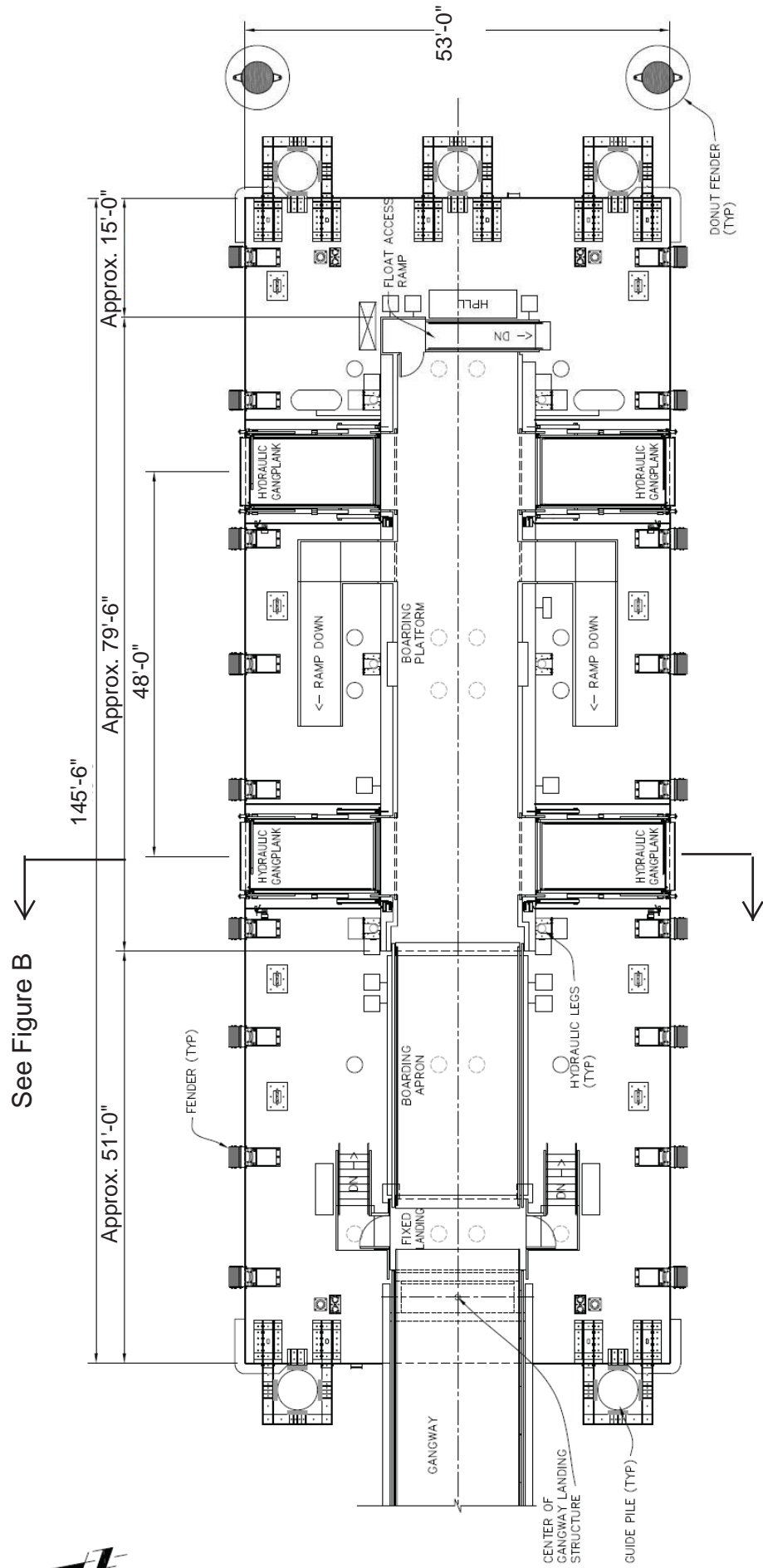
Length (see Figure A):

The height of the fixed landing is 4.5 feet above the top of the float (7.0 feet above the water) in order to allow sufficient distance between the gangway structure and the top of the float. The lowest setting of the boarding platform is 2.0 feet above the top of the float (4.5 feet above the water). The difference in height between the fixed landing and the lowest setting of the boarding platform is 2.5 feet (30 inches). This height difference can be accommodated on a sloped surface in a distance of 30 feet at the maximum slope of 1:12. The distance required at the forward end of the float for the gangway support frame and the fixed landing is approximately 21 feet. Therefore, the distance from the forward end of the float to the boarding platform is 51 feet (21 feet + 30 feet). The boarding platform length is determined by the ferry door spacing (48 feet) plus the space required for the hydraulic lift cylinders at the sides of the gangplanks and a District employee only access ramp down to the float deck. This total length is approximately 79.5 feet. Beyond the boarding platform, there are fender supports, mooring hardware, guide pile collars, and access space for deckhands to work. This occupies 15 feet leaving an unobstructed walking path of 6 feet at the aft end of the float. This is the width required to allow for a safe working environment while accommodating all operational needs on the float. All these dimensions taken together total up to 145.5 feet (51' + 79.5' + 15').

Beam (see Figure B):

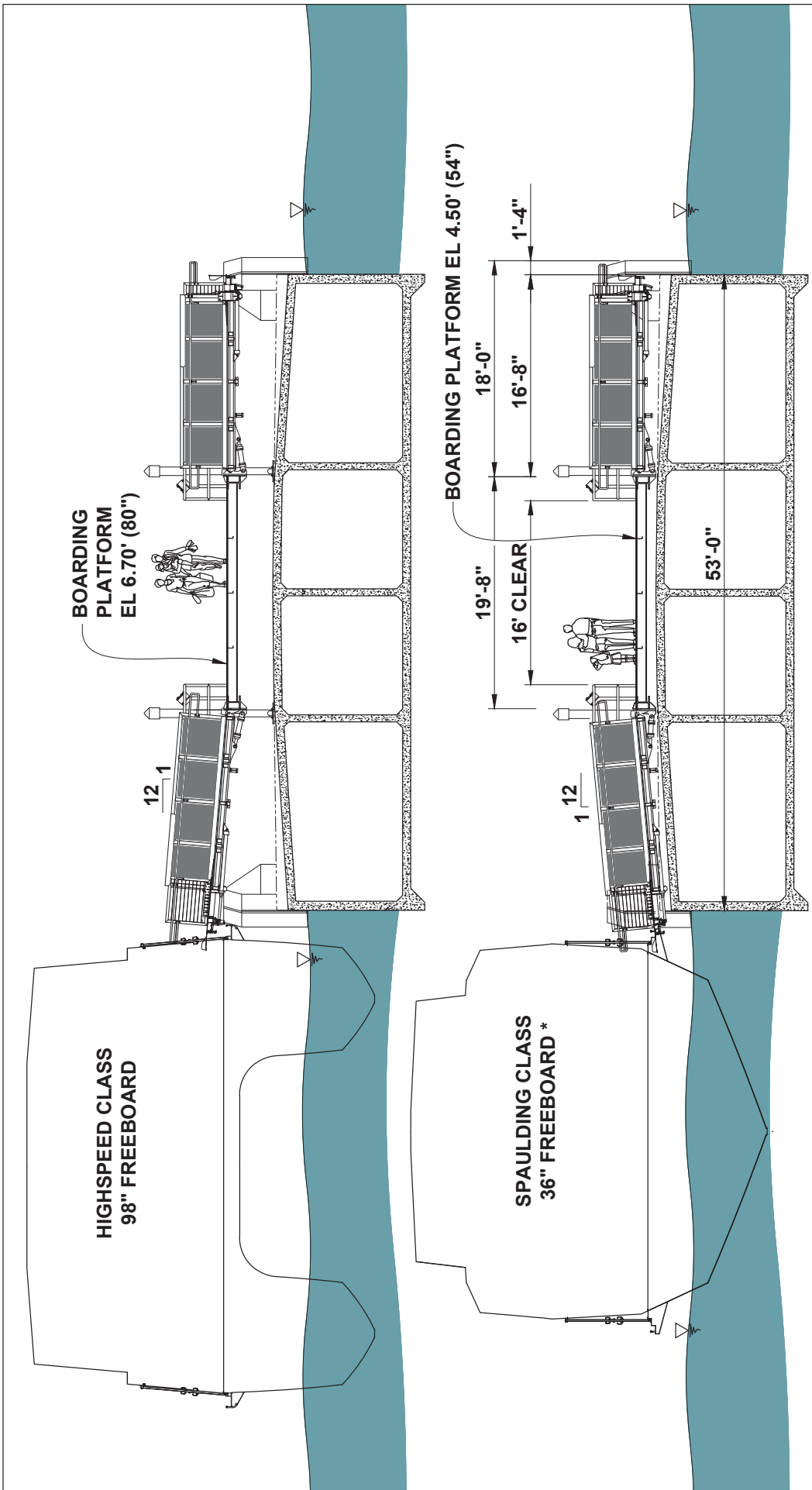
The float beam (width) is determined from the boarding platform width and distance necessary for the gangplanks to access the different ferry door locations while maintaining a slope no steeper than 1:12 (vertical : horizontal). The float freeboard was set at 2.5 feet (30 inches) above the water (see Figure C). This distance is considered the minimum distance to keep passengers safe from wave splash and for the protection of the float surface from wave action. The existing float has a freeboard of 24 inches above the water. Wave action on the existing float during a storm condition can be seen in the attached photographs. The freeboard for a ferry door varies depending on the number of passengers and the volume of consumables (fuel, sewage, etc.) in the ferry. For example, a Spaulding Class ferry door freeboard varies from approximately 56 inches above the water with no load in the ferry to 42 inches above the water with a full load. These freeboards are for a load that is distributed evenly throughout the ferry. When passengers congregate near a door for unloading and the gangplanks are attached, the vessel rolls so that the freeboard at that door decreases. Field measurements of this condition for the Spaulding ferries resulted in a 36-inch door freeboard. This 36-inch freeboard was used as the lowest freeboard condition to ensure that passenger slopes would satisfy the ADA guidelines. The boarding platform on the float deck requires a depth for the structural framing while still providing a minimum clearance between the underside of this framing and the concrete deck of the float. After accounting for the boarding platform framing, the minimum distance between the boarding platform walking surface and the top of the float is 24 inches, which equates to 54 inches above the water. The vertical distance between the ferry freeboard of 36 inches and the boarding platform of 54 inches is 18 inches. Using a maximum slope of 1:12 results in a gangplank length of 18 feet. The ferry will lay up against the float fender which will be 1'- 4" beyond the float face. This results in a distance on the float

of 16'-8" (18'-0" – 1'-4"). Higher ferry door freeboards do not affect the float width or gangway length. The ferries have 8-foot wide doors and passengers will be using both doors simultaneously. The boarding platform has a 16-foot clear width to accommodate the passenger flow from both doors being used simultaneously. To provide a maximum 16 feet of clear walking space on the boarding platform and all associated framing (guardrails, gates to the gangplanks fixed boarding ramp, controls, and cabinets) required an overall boarding platform width of 19 feet 8 inches. Adding these distances together results in a float beam of 53 feet (16'-8" + 19'-8" + 16'-8").



Float Plan View
For Length Discussion

FIGURE A



* MEASURED FREEBOARD AT DOOR DURING UNLOADING. FREEBOARD AT DOOR WITH FULL PASSENGER LOAD AND PASSENGERS DISTRIBUTED THROUGHOUT FERRY IS 42 INCHES.

FLOAT WIDTH

FIGURE B

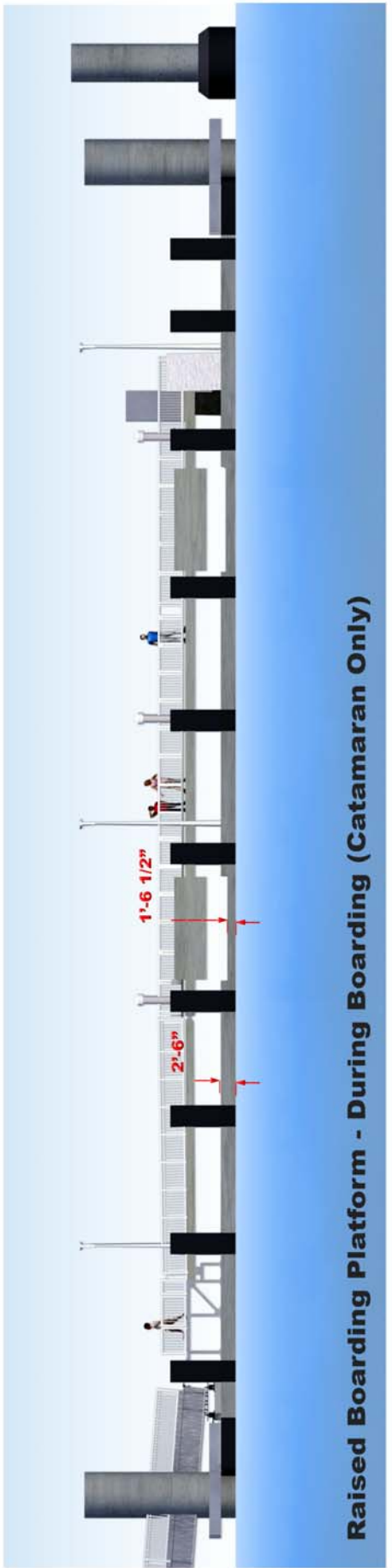
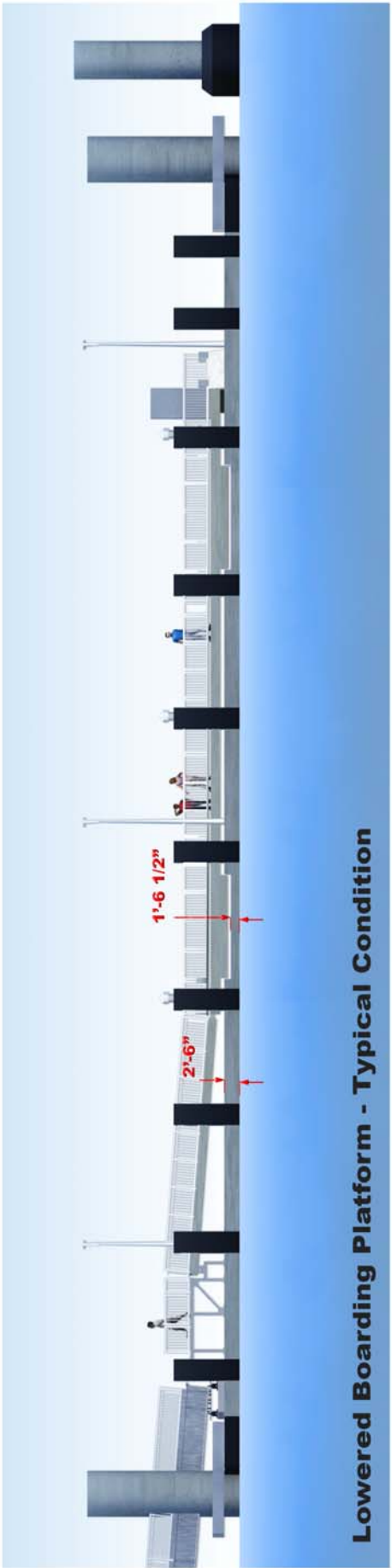


FIGURE C

Photos of Existing Float Conditions during a Storm

