



HARBOR CONSTRUCTION STANDARDS - 2021

CITY OF NEWPORT BEACH PUBLIC WORKS DEPARTMENT

WATERFRONT PROJECT GUIDELINES AND STANDARDS, HARBOR DESIGN CRITERIA COMMERCIAL & RESIDENTIAL FACILITIES

APPROVED BY CITY COUNCIL: MARCH 23, 2021

DESIGN CRITERIA / GENERAL NOTES

GENERAL

The construction of harbor facilities shall accommodate the need for safety and durability as well as convenience and appearance. Structural elements of the docks, floats, gangways, piles, etc., shall be adequate to safeguard human life, boats, and boating equipment. Boat berthing facilities shall be designed to adequately handle anticipated loads with reasonable factor of safety as deemed appropriate by the City of Newport Beach. Materials of construction shall resist corrosion from saltwater in order to assure low maintenance requirements and long life of the facility. Floats shall be designed to assure stability and buoyancy for safe operations. Adequate utilities meeting all requirements of the current, applicable codes shall be provided for the convenience and safety of boaters and maintenance workers.

Harbor Permits and Plan Check shall be as per Title 17 of the City of Newport Beach Municipal Code and Council Policy H-1.

Dock systems shall be designed by a civil or structural engineer, licensed by the State of California, who is experienced in the design of marine structures. Repairs and non-structural modifications to existing residential docks can be designed by a licensed contractor experienced in dock facilities, at the discretion of the City of Newport Beach.

In accordance to California Building Code [A] 104.10 Modifications. "Wherever there are practical difficulties involved in carrying out the provisions of this code, the [Chief] Building Official shall have the authority to grant modifications for individual cases, upon application of the owner or owner's representative, provided the [Chief] Building Official shall first find that special individual reason makes the strict letter of this code impractical and the modification is in compliance with the intent and purpose of this code and that such modification does not lessen health, accessibility, life and fire safety, or structural requirements. The details of action granting modifications shall be recorded and entered in the files of the department of building safety." Fire Marshal approval shall be required for variances associated with the fire protection system.

In accordance to California Building Code [A] 104.11 Alternative materials, design and methods of construction and equipment. "The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the [Chief] Building Official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety." Fire Marshal approval shall be required for variances associated with the fire protection system.

I. WATERSIDE DEVELOPMENT

The limits and constraints of construction in the harbor are defined by a series of lines that have been established over time by the Federal Government, as well as the City of Newport Beach. These lines have been defined in Chapter 17.01 of the Municipal Code. Prior to the preparation of documents to be submitted to the City of Newport Beach for review of a proposed project, the applicant should obtain a full understanding of these lines and have a qualified engineer, surveyor or contractor define these lines on any plans submitted for a proposed project. These lines include the existing or current edge of construction along the waterfront with respect to the Federal Bulkhead, Pierhead and Project Lines, Channel Lines, property lines (and their projections), Anchorage Area, and Turning Basins.

A. DOCKS

1. ALTERNATIVE BERTHING GEOMETRIES

Various berthing geometries are available and acceptable for the berthing of boats for a docking facility. The following layouts and designs present the generalized arrangements that are considered acceptable to the City of Newport Beach for the berthing of boats. The attached Figures and "Case" geometries can be utilized as shown, or in combination with one another, in an overall marina dock scheme.

2. LAYOUT AND DESIGN (Commercial & Residential)

a. General

- (1) Layout and design of harbor facilities shall be based upon the use of the facility defined as follows:
 - (a) Single or joint residential
 - (b) Multi-residential
 - (c) Commercial (Type 1): typical
 - 1) Passenger (e.g., ferry, event cruise, etc. with no on-dock queuing)
 - 2) Recreational boat marina
 - 3) Yacht club
 - 4) Other commercial (e.g., restaurant, office, yacht broker, etc.)
 - 5) Public pier
 - (d) Commercial (Type 2): not common in Newport Harbor
 - 1) On-dock passenger staging (i.e., where passenger queue on the dock prior to boarding)
 - 2) Docks used for transfer of cargo or other materials
- (2) Layout and Design Guidelines for Marina Berthing Facilities (2005 edition or as updated) published by the State of California State Parks Division of Boating and Waterways, except as modified by the City's Harbor Standard Drawings within the Design Criteria may be used as a guide to design harbor structures.
- (3) See the attached Harbor Standard Drawings for plans, sections and details of typical conditions for vessel moorings and docks, gangways, platforms, seawalls, and beach profiles. These Standards are to be considered minimum requirements for the cases represented and, at the City of Newport Beach discretion, may not apply to the specific project submitted. The City of Newport Beach reserves the right to mandate deviation from the Standards, if particular project conditions require special consideration.

b. Slip and Boat Overhang into Adjacent Fairways

- (1) Berths shall not be occupied by vessels more than three (3) feet longer than the berth or slip, or in the case of fairways with a width of 1.75 x Lb (length of berth), not more than 10% of the length of the berth's finger.
- (2) For berths either parallel or perpendicular to a main channel, vessels can extend beyond the limits of the slip by as much as the beam of the boat.

c. Finger and Walkway Widths

- (1) Minimum finger widths for recreational, commercial, and residential docks shall be per Table No. 1.
- (2) Fillets at the connection of walkways to fingers shall not have less than a 4-foot side.
- (3) Outer end (end tie) and side-tie fingers shall be a minimum of one foot wider than the minimal widths for all other adjacent finger docks.
- (4) Residential Headwalks and Mainwalks
 - (a) Minimum residential headwalk widths shall be no less than six (6) feet for dock lengths up to 120 feet in total length, and eight (8) feet wide for dock lengths of more than 120 feet.
- (5) Commercial Headwalks and Mainwalks
 - (a) Minimum widths shall be no less than six (6) feet for dock lengths up to 120 feet in total length, and eight (8) feet wide for dock lengths of more than 120 feet. If use of a walkway is for staging the public while waiting to board a vessel, the minimum dock width shall be 12 feet.
 - (b) At gangways, a minimum of six (6) feet of walking surface shall be maintained in front of the farthest gangway projection (including toe plate) at high tide, and have a minimum of four (4) feet of clear space to walk along the side of any gangway for access to berthed vessels.

Table No. 1
Minimum Finger Widths

Finger Float Width (Feet)	Length of Berth (Feet)
F = 5.0'	All ADA Accessible Finger Floats
F = 3.0'	Up to 35'
F = 4.0'	36' to 59'
F = 5.0'	60' to 79'
F = 6.0' (1)	80' to 119'
F = 8.0' (1)	120' or over

(1) Widths of more than that shown in this Table may be necessary for specific site conditions and/or uses of fingers over 70 feet.
(2) Minimum 5.0' widths are required for the entire path of travel for ADA access, including paths along main- and headwalks. See Section 5 of these Harbor Design Criteria for exceptions.

d. Single and Double-Wide Slips

- (1) Single-wide slips are those slips that have a finger on each side of the boat. Double-wide slips have only one finger adjacent to any given boat.

e. Vessel "Rafting"

- (1) Vessel "rafting" is the practice of connecting multiple vessels together, with only one of the vessels being tied/berthed to a walkway or finger. Rafting of vessels is not allowed, unless specifically approved by the City's Harbor Department and/or the Fire Department for special facilities and/or events.

f. Long Docks

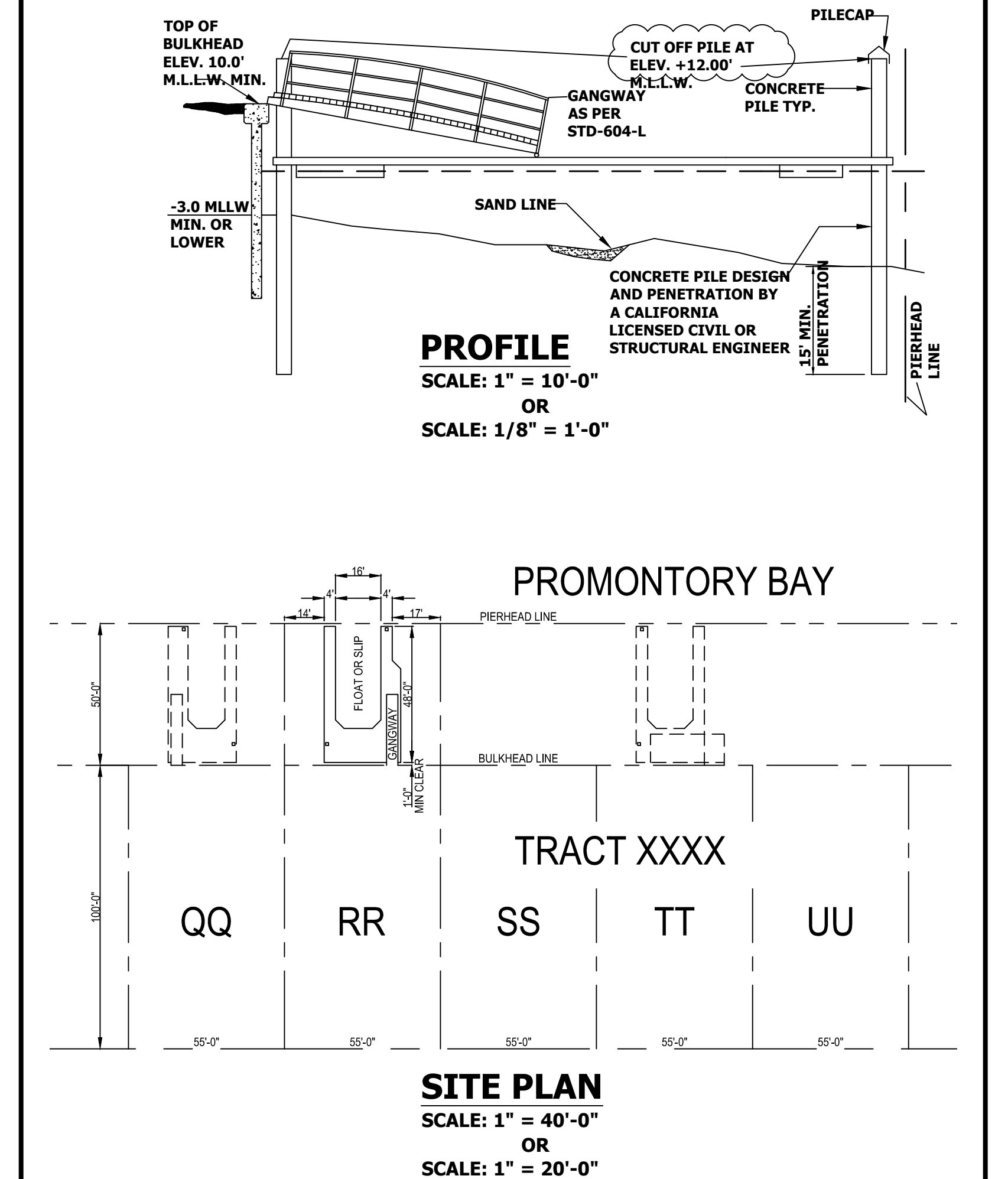
- (1) Long docks are defined as side-tie docks with more than one boat berthed. Unless specifically identified otherwise, and for the purpose of establishing the number of boats that may utilize a long dock per DBW Layout and Design Guidelines for Marina Berthing Facilities (2005 edition or as updated), it will be assumed that one boat is berthed alongside a long dock every 40 feet of long dock length. This would relate to a 30-ft berthed boat, with five (5) feet of clearance on either end. Distance between two adjacent boats shall be minimum 10 feet.

g. Loading Criteria

- (1) The design of the dock system shall incorporate all anticipated dead and live loads. These criteria conform to DBW Layout and Design Guidelines for Marina Berthing Facilities (2005 edition or as updated).
 - (a) Dead Loads: Dead loads shall include the weight of the dock system components (walers, bracing, bracket, etc.), which are permanently incorporated into the dock system, and non-dock system components (transformers, dock boxes, gangways, pumps, dinghy/kayak/SUP racks, trash containers, buildings, etc.) which are permanently affixed to the dock system.
 - (b) Live Loads: Live loads are loads produced by the use of the dock system, such as people, carts, mobile equipment, etc. The dock system shall be capable of supporting live loads and freeboards per the "Flotation and Freeboards" section in these standards. The structure shall also be capable of supporting a 400-pound moving point load anywhere on the deck surface, but no closer than 12" from any dock edge, while maintaining the level tolerances cited in this guideline.
 - (c) Wildlife Loads: Refer to DBW Layout and Design Guidelines for Marina Berthing Facilities (2005 edition or as updated) for live loads imposed by wildlife on the docks. These wildlife live loads may include sea lions.
- (2) Wind loads shall be calculated both parallel to and perpendicular to the maximum length of vessels and structures in accordance to current California Building Code.
 - (a) Wind load on the lateral area of vessels or structures shall not be less than 15 pounds per square foot acting on the projected area of the docks as well as the profile area - "sail area" of the berthed vessels above water level.
 - (b) Lateral area of vessels for wind load calculations acting on the "sail area" of the vessel shall be as per Exhibit No. 1, or the actual sail area of the anticipated vessel, whichever is greater.
 - (c) Ten percent (10%) of the full wind load for an unshielded vessel shall be applied to each vessel in the leeward side of the unshielded vessel.

APPLICANT'S PLAN & PROFILE

SAMPLE SITE PROFILE & PLAN



APPLICANT'S SUPPLEMENTAL NOTES (IF NEEDED)

SITE PLAN INSTRUCTIONS

- Provide a partial site plan in the space provided above drawn to an adequate scale to clearly show the following information:
- Location and dimension of proposed structure including piles and location of existing structures on adjacent properties.
 - Location of bulkhead, pierhead and project lines.
 - Location of property lines.
 - Location of channel markers within 200 feet
 - Lot sizes and lot numbers, if available.
 - Existing ground profile beneath proposed structure.
 - Elevation of top and bottom of bulkheads and piles with respect to MLLW.
 - Area and profile of any proposed dredging with elevations showing depths with respect to MLLW.
 - Any special conditions affecting the construction or affecting boating operations.
 - Existing structures shall be shown in light dashes. New work shall be shown in heavy solid lines.

APPLICANT'S PROPOSED PROJECT DESCRIPTION

PROJECT TITLE:

PROJECT ADDRESS:

PROPERTY OWNER NAME:

PHONE #:

ADDRESS:

CITY OF NEWPORT BEACH
PUBLIC WORKS DEPARTMENT

TITLE SHEET & SPECIFICATIONS

DESIGNER: PHONE #: SIGNATURE:

PUBLIC WORKS APPROVAL

DWG. SCALE: DATE:
AS SHOWN APRIL 27, 2021

BY: DATE:

DRAWING NO. SHEET 1 OF 9



HARBOR CONSTRUCTION STANDARDS - 2021

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WATERFRONT PROJECT GUIDELINES AND STANDARDS, HARBOR DESIGN CRITERIA COMMERCIAL & RESIDENTIAL FACILITIES

DESIGN CRITERIA / GENERAL NOTES

- (3) Current Loading: Floating docks in areas of the harbor may be subject to current loads. Dock shall be designed for minimum current velocity of 1 foot per second (1 feet/sec).
- (4) Impact Loading: Impact Load from design vessel (maximum boat size that may be moored on the dock) striking dock at 10 degree angle (from parallel to dock) with approach speed of minimum one foot per second (1 feet/sec).
- (5) Wave Loading: A simple wave analysis was conducted to provide general guidance of a 100-year return period wind waves and ocean swells at Newport Harbor. In general, the majority of Newport Harbor is dominated by wind waves except for the areas near the harbor entrance which are dominated by ocean swells. Contact the City of Newport Beach, Public Works Department for details of reference study.
 - A qualified civil engineer, licensed in the State of California, shall conduct site-specific engineering analysis to evaluate the appropriate design wave loading for the project.
- (6) Environmental Loads: Refer to DBW Layout and Design Guidelines for Marina Berthing Facilities (2005 edition or as updated) for impact loads imposed by flooding, abandoned boats, broken docks, jetsam, tree limbs, or other debris. Environmental loads may occur throughout the Harbor but specifically in the Upper Bay and near the West Coast Highway bridge.
- (7) Load Combinations
 - (a) Combined load cases for design of docks shall include the following:
 - 1) Dead load plus uniform live load.
 - 2) Dead load plus concentrated 400-lb live load.
 - 3) Dead load plus wind load plus current & wave loads.
 - 4) Dead load plus impact load.
 - (b) Fabrication, handling, and lifting loads shall also be checked in the calculation of the dock system.
 - (c) For design of wood structures, the load duration factors in Table 2.3.2 of the latest edition of the American Wood Council National Design Specifications (NDS) may be applied. Allowable Stress Design and Resistance Factor Design values for wood members shall be reduced by the Wet Service Factor according to Tables 4.3.1, 5.3.1 and 8.3.1 of the NDS.
 - (d) Calculations shall include the transfer of forces from the dock system into the piles. All components within this transfer mechanism shall be substantiated.
 - (e) Load combinations for vertical load bearing structural elements (i.e., piers, wharves, and platforms) in Section 1605 of the California Building Code (2019 or latest edition) and Section 5.3 of the Building Code Requirements for Structural Concrete (ACI 318-19 or latest edition) respectively, shall apply.
- h. Flotation and Freeboards
 - (1) Sufficient flotation shall be provided to support dead load plus live load with freeboards as noted below. Higher live load requirements may be required by the City of Newport Beach, under special circumstances as may be deemed appropriate.
 - Commercial Docks (Type 2), as previously described, which are also used for the on-dock staging (queuing) of passengers, or are subject to high volumes of cargo or other materials, shall be designed for live load of 65 pounds per square foot. Signage indicating maximum number of people (using occupant load factor 200 pounds/person) that may be staged (Dock Staging Capacity) shall be posted at a prominent location at staging area. Type 2 commercial docks are not common in Newport Harbor.
 - Exception 1: Docks whose functionality requires dead load freeboard less than 14 inches (docks used for kayaks, rowboat, etc.) shall be designed for 25 pounds per square foot live load. These special docks shall be exempt from the freeboard requirement on "Flotation and Freeboard" in Section h.1. Signage indicating maximum number of people (using occupant load factor = 200 pounds/person) that may use the dock (Dock Capacity) shall be posted at a prominent location.
 - Exception 2: Repair or modification to less than 50% of an existing dock is exempt from the freeboard requirement on "Flotation and Freeboard" in Section h.1. However, Engineer of Record shall perform freeboard calculation, to provide sufficient flotation under repaired or modified portion of dock section, to match freeboard of existing dock and support minimum live load of 25 pounds per square foot.
 - (a) Residential docks, including multi-family residential, shall be designed for a live load of 25 pounds per square foot.
 - (b) Marinas, Public Pier (also known as Public Docks) and Commercial Docks (Type 1 docks subject to high volumes of pedestrian traffic such as docks used for ferries, charter boats, fishing boats, boat shows, shuttles, water taxis, etc.) shall be designed for a live load of 40 pounds per square foot. Type 1 commercial docks are typical in Newport Harbor.
 - (c) Weight of seawater, for the purposes of flotation calculations, shall be 64 pounds per cubic foot.
 - (2) The flotation shall use a rigid block of expanded polystyrene (EPS) cores or equivalent. The use of hollow pontoons shall not be allowed.
 - (3) Docks shall have pontoons composed of outer shells of either concrete (1" minimum thickness) or an ultra-violet stable plastic such as fiberglass or cross-linked polyethylene (1/8" minimum thickness). Other alternative materials must be submitted to the City for review and approval, per the "Request for Alternate Material or Method of Construction" appeals process. Exposed foam flotation is not allowed.
 - (4) Residential Docks: In addition to the pontoon encapsulation types noted above, residential docks may also use spray-on elastomeric encapsulation systems for pontoons. Spray-on products must demonstrate resistance to ultra-violet rays, solvents that may be present on the water surface, and environmental conditions imposed by saltwater contact. Minimum spray-on product thickness shall be 100 mils.
 - i. Static Floating Tolerances
 - (1) The dock surface of the in-place dock system, which includes finger floats and walkways, under various loading conditions, shall be level within the following tolerances:
 - Under Dead Load Only, & Under Dead and Live Loads:
 - o 1/4" per foot, 1" maximum (transverse)
 - o 1/8" per foot, 1" in 10 feet maximum (longitudinal)
 - Under Dead and Point Live Loads:
 - o 1/2" per foot (4%), 2" maximum (transverse)
 - o 1/4" per foot, 2" in 10 feet maximum (longitudinal)
 - On Accessible Routes, for ALL Loading Conditions:
 - o Shall not exceed 1:50 or 2% maximum (transverse)
 - (2) Under Dead Load Only conditions, the free ends of finger floats shall always float level or higher than the finger float ends connected to the head or mainwalk, within the limits noted above.
 - j. Torsional Resistance Requirements
 - (1) General: Fingers, connected walkways, and free-standing headwalks unattached to other dock elements must be designed to provide dock stability and resistance to torsional loads. Torsion bars installed in fingers, and/or dock framing construction that provides for calculated and verifiable twist resistance, is required. Free-standing headwalks need not provide independent means of torsional resistance if the width of headwalk is eight (8) feet or more.
 - Alternative means of providing torsional resistance to fingers and main- or headwalks may be considered by the City of Newport Beach. Methods such as twist-controlling guide roller assemblies may be considered, if acceptable twist resistance can be proved.
 - k. Guide Piles
 - (1) Dock system pilings shall be designed by a licensed Civil or Structural Engineer, registered in the State of California, who shall have demonstrated expertise in the design of marine structures. Pile loading calculations shall be provided based on a soils investigation by a licensed Geotechnical Engineer, registered in the State of California, or based on minimum code values for soil properties.
 - (a) Alternatively, a static pile load test may be conducted by a professional geotechnical or structural engineer licensed in the state of California and qualified third-party testing agency after piles have been driven, to confirm that the piles can withstand the design loads anticipated. Testing procedures shall be in general conformance with testing procedures defined in Chapter 8 of the Caltrans Foundation Manual (2015 or latest edition) and must be approved by the City prior to commencement. Static pile load tests shall be designed for the type of load to be experience by the pile (lateral loads for guide piles and vertical/uplift loads for platform/piers piles) and for the estimated loads based on berthed vessel sizes and dead and live loads.
 - (2) Soil conditions in Newport Harbor can vary depending on the existence of rock strata near historic bluffs along the coastline. The Applicant is advised to research the soils conditions of the subject site in order to properly assess the conditions for pile stability and installation.
 - (3) Loading Conditions & Criteria
 - (a) Applied lateral wind and impact loads shall be calculated for not lower than a +7.5 foot MLLW water surface, and a load height acting upon the piles at no lower than +8.5 foot MLLW.
 - (b) Loads imposed on the dock framing system, as previously noted in this loading criteria, shall be imposed in like-kind to the piles providing the lateral load resistance for the docks.
 - (c) Pile penetration shall not be less than 15 feet.
 - (d) Pile cutoff elevation shall not be lower than +12.0 feet MLLW in protected areas of the Harbor. Applicant shall consider pile top elevation of +13.0 or higher for facilities in or near the Harbor Entrance, due to more severe environmental conditions.
 - (e) Guide pile caps shall be provided to discourage birds from perching on piles.
 - (4) Special Geological Conditions
 - (a) There are locations within the Newport Harbor area that contain rock-like geological conditions, exhibiting different soil resistance characteristics than standard bay mud. The applicant is encouraged to observe the type of guide piles (e.g., driven steel piles, drilled-in concrete piles, etc.) used in the existing surrounding installations to assess the type of piles that may be required for any new project. A licensed Geotechnical Engineer could be retained to provide this information and pile design and installation recommendations, as well.
 - (1) Flotation
 - (a) Flotation systems shall be the products of manufacturers and contractors regularly engaged in the production of such items for marine construction.
 - (b) Flotation units shall consist of:
 - 1) Concrete cast around a solid, closed cell foam core, or
 - 2) Fiberglass, polyethylene or plastic shell with a fitting, solid, closed cell foam core.
 - (2) Plastics
 - All plastics used in the dock systems shall be ultra-violet light stabilized or protected. Plastics proposed for use must have a demonstrable performance history in salt water environments of at least ten years, or be the recommendation of a California-licensed Civil or Structural Engineer. Design strengths and thickness shall be appropriate for the intended purpose.
 - (3) Foam core for floats shall be a rigid block of closed cell expanded polystyrene with a unit weight of between 0.95 to 1.2 pounds per cubic foot. Properties of foam shall conform to ASTM C578, with maximum water absorption of 3.0 percent or less as determined by ASTM C 272, Method C. The foam core shall not have more than 10 percent reground material, and reground foam pieces shall not exceed 3/8-inch diameter.
 - b. Timber
 - (1) All wood-construction fingers shall have framing that includes cross-members that provide rigid connection to the full-length stringers. All connections shall be made using thru-bolts.
 - Commercial Dock Framing: For independent long docks that float freely and do not have docks and/or fingers attached for stability, all primary load carrying framing members shall be fabricated from glued-laminated beam construction, to prevent warpage of the major members, contributing to dock instability.
 - (2) Allowable Stresses: Allowable stresses for harbor structures shall not exceed those stated in the "California Building Code."
 - (3) Timber used for walking decks shall have a minimum net thickness of 1 1/2 inches.
 - (4) Timber for walking surfaces shall be Douglas Fir, Select Structural. Sawn timber for other framing members shall be Douglas Fir, No. 1, minimum.
 - (5) Glued-laminated timber shall be Douglas Fir 24F-V8, industrial grade for application in wet environments. Fabrication shall comply with Product Standard PS 56-73, "Structural Wet Laminated Timber."
 - (6) Walking surfaces shall have a non-skid finish and be maintained periodically or when worn or presenting a trip hazard. Treated timber decking requires no further non-skid finish.
 - (7) Dimensional lumber is not required to be painted. However, if the applicant chooses to paint, such paint shall be maintained to good condition and appearance.
 - (8) Plywood utilized within dock framing systems shall be exterior grade material. Plywood shall not be used as the walking surface for a dock system, unless the product can be demonstrated that it is provided with a factory-applied protective, non-skid walking surface that will be durable and has a proven process for patching and touch-up. Internal plywood members shall be provided in such a manner that water can be easily conveyed off the top surface of plywood and not pond or get trapped, leading to early deterioration and dry rot.
 - (9) Weight of treated Douglas Fir shall be assumed to be 35 pounds per cubic foot.
 - (10) All timber used for dock construction shall be marked with the appropriate grade of material and preservative treatment, or may be subject to rejection by the owner, owner's representative, or City Building Inspector, dependent on approved permit plan set and project permit requirements.
 - (11) Wood Preservative for Timber
 - (a) All timber products shall be coated with preservative treatment to retention limits recommended by the American Wood Preservers Association Standard M4 "Standard for the Care of Preservative-Treated Wood Products" and AWWPA Standard C2 "Lumber, Timber, Bridge Ties & Mine Ties - Preservative Treatment by Pressure Processes."
 - (b) Current State and Federal environmental requirements and guidelines for the type and application of preservative treatments will be strictly enforced.
 - (c) All lumber must bear a stamp approved by the American Lumber Standards Committee for conformance to the American Preservers Association Standards.
 - (d) Field cuts and bored holes shall receive field-applied preservative treatment in accordance with the Western Wood Preservers Institute (WWPI) Best Management Practices. Preservative treatment chemicals shall not be allowed to enter harbor waters.
 - c. Metal
 - (1) Any steel components used in the marine environment shall be hot-dip galvanized with a minimum of three (3) mils of zinc, or epoxy coated per ASTM A 934 and manufacturers recommendations, or shall be stainless steel.
 - (2) Structural steel shall conform to Standard Specifications for Structural Steel for Bridges and Buildings. Stainless Steel shall conform to 316 material specifications. Aluminum shall be marine grade.
- (3) Fabrication and erection shall comply with the latest applicable codes as noted:
 - (a) AISC, Latest Editions
 - (b) Aluminum Structural Welding Code, Latest Edition
 - (c) Aluminum Design Manual, Latest Edition
 - (d) 12011 Design Manual for Structural Stainless Steel, Latest Edition
- (4) All bolts securing primary structural members shall be a minimum of 1/2-inch diameter thru bolts. Bolts shall be minimum A307 and include washers where direct contact with timber members occurs. Carriage bolts are also allowed.
- (5) No connecting device shall protrude beyond the fascia or waler into the berthed area, which may contact any part of the berthed vessel, or extend up into any walking surface creating a tripping hazard.
- d. Concrete and Reinforcing (for concrete docks, platforms, and piers)
 - (1) Concrete shall be designed for permeability, strength, chemical stability and abrasion resistance, appropriate for its application.
 - (2) In absence of geotechnical report recommendations based on soil testing, portland cement shall conform to ASTM C150 Type I/IV modified, and low alkali. Chemical admixtures shall conform to ASTM C494. Chemicals designed to limit corrosion of internal reinforcing may be used. Air entrainment admixtures shall conform to ASTM C260. Coarse and fine aggregate shall conform to ASTM C33, and ASTM C330 where lightweight aggregates are used. Lightweight aggregate, if used, shall consist of expanded and coated shale or equivalent material of sufficient strength and durability to provide concrete of the required strength.
 - (3) For concrete that is not subject to saltwater splash or immersion, the minimum 28-day compressive strength shall be fc=4,500 psi and the water-to-cement ratio shall be 0.45 conforming to the requirements for concrete exposure class S2 in Table 19.3.2.1 of ACI 318-19 (or latest edition).
 - (4) For concrete that is subject to saltwater splash, saltwater immersion, and/or brackish water, the minimum 28-day compressive strength shall be fc=5,000 psi and the water-to-cement ratio shall be 0.40 conforming to the requirements for concrete exposure class C2 in Table 19.3.2.1 of ACI 318-19 (or latest edition).
 - (5) Concrete structures shall be designed to provide sufficient coverage of reinforcing steel, so as to prevent corrosion, per code requirements. For structures exposed to saltwater splash or immersion, bar reinforcement shall conform to ASTM A706, and shall be epoxy coated per ASTM A775 or ASTM A934. Welded wire mesh shall conform to ASTM A185 and shall be galvanized or epoxy coated conforming to ASTM A884, with all visible defects and cut ends repair coated. Wires used to tie reinforcing steel shall be either epoxy-coated steel or 316 stainless steel.
- e. Pilings and Anchorage
 - (1) Piles shall be the products of manufacturers and contractors regularly engaged in the production of such items for marine construction. Typical materials approved for pile materials include:
 - (a) pre-stressed concrete
 - (b) steel
 - (c) high-strength composite materials
 Timber piles are not allowed.
 - (2) Unless subsurface soil materials prevent their use, pilings shall be pre-stressed concrete. In absence of soil report recommendations based on soil testing, portland cement shall be ASTM C150 Type II concrete meeting exposure class C2 and having minimum 28-day compressive strength fc=6,000 psi and a water cement ratio of 0.4 shall be used in compliance with ACI 318-19 Table 19.3.2.1, modified, low alkali. Water for mixing and curing shall be fresh, clean and potable. Aggregates shall conform to ASTM C33, Size Number 67, and be free from any substance that is deleteriously reactive with the alkalis in the cement. Admixtures, if used, shall conform to the requirements of ASTM C494 and not contain chlorides. Corrosion inhibiting concrete admixtures are encouraged. Pre-stressing steel shall be uncoated, seven-wire stress relieved strand with a minimum ultimate stress of 270 ksi conforming to ASTM A416, Grade 270. Spirals shall conform to ASTM A1064, and ties and other reinforcing steel shall conform to ASTM A615, Grade 60, or ASTM A706, Grade 60, plain or deformed. Piles shall cure and reach a strength of not less than fc=4,000 psi before de-tensioning, cutoff of the strands, and transfer from forms. Piles shall have a minimum strength fc=6,000 psi at time of driving.
 - (3) Guide rollers shall be fabricated from polyethylene, UHMW, polyolefin or polyurethane roller or plate material. As an option to the use of rollers, UHMW rub blocks or sheets may be used. Minimum thickness of a rub block or sheet shall be 2 inches, with attachment bolts countersunk into the UHMW material.
 - (4) Any structural steel components used in the marine environment shall be hot-dip galvanized or epoxy coated per manufacturers recommendations, or AISI Type 316 stainless steel.

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CITY OF NEWPORT BEACH PUBLIC WORKS DEPARTMENT			
TITLE SHEET & SPECIFICATIONS			
DESIGNER:	PHONE #:	SIGNATURE:	
PUBLIC WORKS APPROVAL	DWG. SCALE:	DATE:	
	AS SHOWN	APRIL 27, 2021	
	DRAWING NO.	SHEET 2 OF 9	
BY:	DATE:		



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WATERFRONT PROJECT GUIDELINES AND STANDARDS, HARBOR DESIGN CRITERIA COMMERCIAL & RESIDENTIAL FACILITIES

DESIGN CRITERIA / GENERAL NOTES

Bulkheads, seawalls or other protective improvements shall be constructed and maintained as shown in Table No. 2. The structure shall also be initially designed and constructed to accommodate and receive future increases in height when directed by the City to protect adjacent low-lying areas from future flooding without the need to replace or substantially alter the structure.

Table No. 2

Year Structure Permitted	Adopted NB Standard Elevation (feet) ¹		Design for Adaptability Elevation (feet) ²	
	NAVD88	MLLW	NAVD88	MLLW
2020	10.7	10.9	13.7	13.9
2021 - 2025	10.9	11.1	14.4	14.6
2026 - 2030	11.0	11.1	14.6	14.8
2031 - 2035	11.0	11.2	14.8	15.0

¹ Derived using the Upper Limit of the Low Risk Avulsion probabilistic sea level rise protection scenario for the Los Angeles tidal gauge, estimated 75 years into the future based on the State of California Sea Level Rise Guidance, 2018 Update. This scenario accounts for the upper range of what is "likely to occur" with approximately an 85 percent probability that sea level rise falls below the elevations shown.

² Derived using the Medium-High Risk Avulsion probabilistic sea level rise protection scenario for the Los Angeles tidal gauge, estimated 75 years into the future based on the State of California Sea Level Rise Guidance, 2018 Update. This scenario accounts for increased sea level with approximately a 1-in-200 or 0.5 percent probability that sea level rise exceeds the elevations shown.

- (4) The distance between seawalls and all floating dock components shall be a minimum of one foot horizontal distance.
- (5) Seawalls shall be designed to resist all applicable vertical and horizontal loads.
- (6) A minimum safety factor of 1.5 shall apply to gravity loads, and a minimum safety factor of 1.1 shall apply to seismic loading cases for the stability of seawalls.
- (7) Decking may butt to the seawall cap, or cantilever over the top of the seawall, if approved.
- (8) Wing Walls: Wing walls are retaining walls that project landward and are perpendicular to the seawall. Wing walls may be necessary to isolate the seawall protection system of one property to the adjacent property. Special care must be taken to assure that the construction of a seawall for the subject property does not adversely impact the seawalls of the adjoining properties, either during construction or over the life of the structures.
- (9) Seawall design requires a soils report from a California-licensed Geotechnical Engineer experienced with the design of waterfront structures. Any sloping surface on the water or landside of the seawall must be accounted for in the calculations for the seawall.
- (10) All concrete sheets used for seawall construction shall be designed as pre-cast, pre-stressed concrete elements. Sheet design shall provide for symmetrical distribution and sizing of strands, to prevent curvature of the wall. See Section 3.e "Pillings & Anchorage" for concrete and reinforcing requirements.
- (11) All seawalls or seawall alterations shall be designed by a California-licensed Civil or Structural Engineer.

7. DREDGING

a. General

All projects that require dredging must follow current local, State and Federal permitting requirements.

b. Maintenance Dredging

For maintenance dredging projects involving small quantities, the City of Newport Beach, in conjunction with the U.S. Army Corps of Engineers, the California Coastal Commission and the Regional Water Quality Control Board, has a program allowing for a simplified permitting process, as long as the amount of dredging and disposal quantities are small and meet material quality requirements for local beach nourishment or disposal at the LA-3 Ocean Dredged Material Disposal Site. The applicant is encouraged to inquire about this simplified process with the City of Newport Beach Public Works Department, to verify qualifications under the Regional General Permit (RGP) 54.

8. UTILITIES

a. General

All utility lines in a floating dock system may maintain clearances as outlined in the DBW *Layout & Design Guidelines for Marina Berthing Facilities*.

b. Electrical Power and Lighting

- (1) All electrical design shall be in accordance with the latest edition of the following codes and standards:
 - (a) California Electrical Code (CEC), 2019 or latest edition
 - (b) National Fire Protection Association (NFPA) 70 National Electric Code (NEC), 2017 or latest edition on which the current edition of the CEC is based
 - (c) NFPA 303, Fire Protection Standard for Marinas and Boatyards
- (2) Electrical systems shall be designed by a California-licensed Electrical Engineer and shall be in accordance with the latest requirements of the City of Newport Beach.
- (3) An electric service connection shall be located at a minimum of every other slip. Electrical receptacles shall be waterproof and approved for marine waterfront exposure. The following are suggested minimum receptacle requirements based on boat size:
 - (a) One (1) 120v, 30 amp outlet at each boat slip under 35ft
 - (b) Two (2) 120v, 30 amp outlets at each boat slip between the sizes of 36 to 45ft
 - (c) One (1) 120v, 30 amp and one (1) 120v, 50 amp receptacle at each boat slip between 46 to 55ft
 - (d) Two (2) 120v, 50 amp receptacles for boats between 56 to 65ft

For vessels larger than 65ft, special power requirements may be required and the applicant should consult the vessel manufacturer. Some large vessels may require 220v or 480v, 100 amp services. Sub metering of each boat slip is recommended and has proven to reduce power usage in marinas where meters have been installed.

- (4) Lighting shall be provided on all floating structures to illuminate paths of travel a minimum of one foot-candle at 15 feet from the light source with light sources not greater than 30 feet on-center. Lighting levels shall be sufficient to illuminate dock edges and obstructions without interfering with boater navigation or projecting onto neighboring properties. All lighting on landside and waterside structures and buildings shall be designed to minimize reflection/glare on the adjacent water areas with consideration for lighting reductions in evening hours.
- (5) Electrical cables and conduits shall be fastened securely to the dock system and gangways such that the system is protected from damage by boats. All electrical equipment shall be located above the harbor water level per latest NEC requirements at all times. If distribution cabling will be subject to water contact, cabling shall be rated for submersible use. All strapping supports for conduit shall be stainless steel. All electrical conduit and cables must be concealed within the dock system.
- (6) Transformers and panels located on the docks shall meet all requirements of the NEC. Several maintenance receptacles should be placed throughout the marina system to allow dock maintenance crews to use small electric tools without using metered power dedicated to slip renters.
- (7) Commercial Facilities
 - (a) Commercial facilities shall provide minimum lighting levels for public safety along the path of travel from land to the berthed vessel. Lighting levels shall be sufficient to illuminate dock edges and obstructions without interfering with boater navigation. This is considered to be a minimum one foot-candle at 15 feet with light sources not greater than 30 feet on-center.
 - (b) Lighting fixtures with a capacity of 9 watts for compact fluorescent lights or 4 watts for LEDs mounted at heights between 1.5 to 3 feet above the floating deck surface in dock boxes or on individual pedestals along the path of travel will generally meet this requirement. Fixtures should be located such that lighting levels on the walking surface are as uniform as possible.
 - (c) In addition, pole-mounted lighting shall be provided to illuminate vertical access systems such as gangways, steps, and lifts, providing a higher level of illumination at vertical transitions in the path of travel.
 - (d) Lighting systems shall be designed to provide light for the floating walking and access surfaces and not project light into neighboring properties, skyward and/or water space. Special lens and/or shields may be required to ensure that stray light is blocked and/or managed.
 - (e) All lighting shall be controlled by photo cells and/or timers, to assure that their operation is automatic and energy conserving. Lighting systems and controls shall be tested annually for functionality. Light bulbs and photocells shall be replaced as required.
- c. Plumbing
 - (1) Plumbing systems shall be designed by a licensed Civil or Mechanical Engineer, registered in the State of California, and shall conform to the latest California Plumbing Code requirements. Water mains supplying water to domestic and fire water systems shall conform to the latest editions of the California Fire Code and applicable NFPA standards.
 - (2) One hose bib shall be provided for every two (2) boats, as a minimum. Hose bibs for every boat slip are recommended for boater convenience and the reduction of clutter on the docks.
 - (3) Backflow preventers shall be provided for all water supply systems into the site. Pressure reducers or booster pumps may be required to meet pressure and flow requirements.
 - (4) Refer to Section 6.b "Sewage Pump Out Facilities" for criteria for sewage system installations.
 - (5) Supply water and sewage piping shall accommodate the full range of tidal movement, via the installation of flexible hoses and/or mechanical swivel pipe fittings. All materials shall be suited for the salt-water marine environment and be rated as "Food Grade" materials.
- d. Fire Protection
 - (1) General
 - (a) All fire protection systems for marinas, wharves and piers shall be in accordance with NFPA Standards 14 and 303, latest edition, and the California Fire Code Appendix II-C, latest edition. See the attached Newport Beach Fire Department Life Safety Services Guideline F.01 - Fire Protection for Marinas, Wharves, and Piers for system requirements.
 - (2) Code Requirements
 - (a) Retroactivity of code provisions: At the option of the Newport Beach Fire Department, the authority can make the conditions and provisions of applicable current codes retroactive, if deemed necessary for public safety. Otherwise, the provisions of applicable codes that existed or were approved for construction or installation prior to the effective date of the standard shall apply.
 - (3) Fire Department connections (FDCs), backflow preventers and pressure reducing assemblies, firehose cabinets (FHCs), fire standpipes and portable fire extinguishers shall be provided on the docks, as required by Code. Owner shall perform periodic testing and replacement of fire hoses in conformance with the City of Newport Beach Fire Department requirements.

(4) Commercial Facilities

- (a) All commercial dock installations shall be provided with a fire fighting system, approved by the City of Newport Beach Fire Department. If the City water pressure is not adequate to produce pressures necessary to meet City and Code requirements, an auxiliary booster pump system may be required. In accordance with CBC Sections 104.10 and 104.11, the owner may also submit a request for modification from City and Code requirements with approval by the Fire Marshal and Chief Building Official. The residual water pressure for unassisted firefighting using the on-dock fire hose cabinets and the required boosted water pressure for Fire Department use shall be noted at the FDCs serving the dock system.
- (b) All new and existing marinas and boating facilities shall meet the requirements described in Newport Beach Fire Department Life Safety Services Guideline F.01 - "Fire Protection for Marinas, Wharves, and Piers" and the Figures as made part of these Harbor Design Criteria. The purpose of these requirements is to facilitate safe boating navigation, as well as provide fire-fighting capability.

(5) Residential Facilities

- (a) Fire protection systems for single-family residential docks are optional, although highly recommended. The residential owner should contact their insurance carrier for any policy requirements associated with providing a fire protection system.
- (b) Fire protection for multi-family or condominium residential docks, piers and floats are required to have a fire protection system meeting City and Code requirements.

9. ENVIRONMENTAL

a. Commercial Facilities

- (1) All commercial facilities shall prepare a Best Management Practices (BMP) plan to document environmental practices to be applied to daily operations. BMP plans shall address in-water maintenance limitations, storage and handling of hazardous and/or waste products common to the boating community, and emergency response to chemical spills.
- (2) BMP plans for landside facilities such as parking lots shall meet City and County of Orange water quality management plan (WQMP) and/or low impact development (LID) requirements. Preparation of a WQMP or LID by a California-licensed Civil Engineer may be required for these developments. The RWQCB may require additional compliance with National Pollutant Discharge Elimination System (NPDES) permit requirements based on project-specific construction and post-construction impacts.
- (3) BMP plans for waterside facilities shall comply with local CEQA mitigation measures and the requirements of the Coastal Development Permit, RWQCB Water Quality Certificate, and USACE permit. The Clean Marine Program provides BMP guidance to assist marina, boatyards, and other commercial dock facility owners in the preparation of BMP implementation and operation plans.
- (4) Commercial facilities shall provide a means for vessels to pump out their bilge tanks. The wastewater byproducts shall be conveyed to an approved treatment and disposal facility.

b. Residential Facilities

Not applicable

10. PERMITTING

Project Types and City Classifications: The purpose of project types and City classifications noted below is to establish the permit fee structure and process for submitted projects. Percentage replacement is based on the valuation of total dock system. Values of various types of construction are based on City records for average construction, and are not necessarily based on the construction cost estimates provided to the City by the Applicant.

a. Maintenance Projects

- (Does not require State and Federal permit processing)
- (1) Re-decking an existing float, gangway, or pier, like for like (not more than 20% of total replacement cost).
- (2) Fixing dry rot or damage (not more than 20% of total replacement cost).
- (3) Replacing piles, like for like, in the same hole (maximum 7 piles).
- (4) Replacing a gangway to City standards.
- (5) Raising a bulkhead to City standards.
- (6) Replacing deteriorated tie rods with earth anchors.
- (7) Repairing seawall cap beams and deadman.
- (8) Emergency repair of structures deemed by the City to jeopardize public safety. (Follow-up permitting may be required with the Coastal Commission.)
- (9) Partial demolition of structures; i.e., elimination of half of a "U" shaped dock and/or respective piles.
- (10) New water at sea side of an existing bulkhead, minimum of 2 feet above mudline (without encroaching property line).

b. Alteration and New Construction Projects

- (Requires State and Federal permit processing)
- (1) Re-decking an existing float, gangway, or pier, like for like (more than 20% of total replacement cost).
- (2) Fixing dry rot or damage (not more than 20% of total replacement cost).
- (3) Relocating one (1) or more piles.
- (4) Replace float, pier and/or gangway, like for like.
- (5) Change in orientation or configuration of an existing dock, including pile relocation.
- (6) Any increase in dock footprint.
- (7) Total reconstruction of a float, gangway, and/or pier.
- (8) New configuration of a float, gangway, and/or pier.
- (9) Replace seawall panels.
- (10) New bulkhead system.

II. LANDSIDE DEVELOPMENTS (Commercial Only)

- A. Landside developments of waterfront projects are subject to City of Newport Beach - Community Development Department, Building Division and Planning Division requirements.
- B. See *DBW Layout and Design Guidelines for Marina Berthing Facilities* (2005 edition or as updated) for minimum requirements for landside facilities, in support of waterfront developments.
- C. Landside requirements for marina projects include location and design of restroom facilities, minimum parking requirements and ADA compliance.

CITY OF NEWPORT BEACH PUBLIC WORKS DEPARTMENT			
TITLE SHEET & SPECIFICATIONS			
DESIGNER:	PHONE #:	SIGNATURE:	
PUBLIC WORKS APPROVAL		DWG. SCALE: AS SHOWN	DATE: APRIL 27, 2021
BY: _____		DRAWING NO.	SHEET 4 OF 9

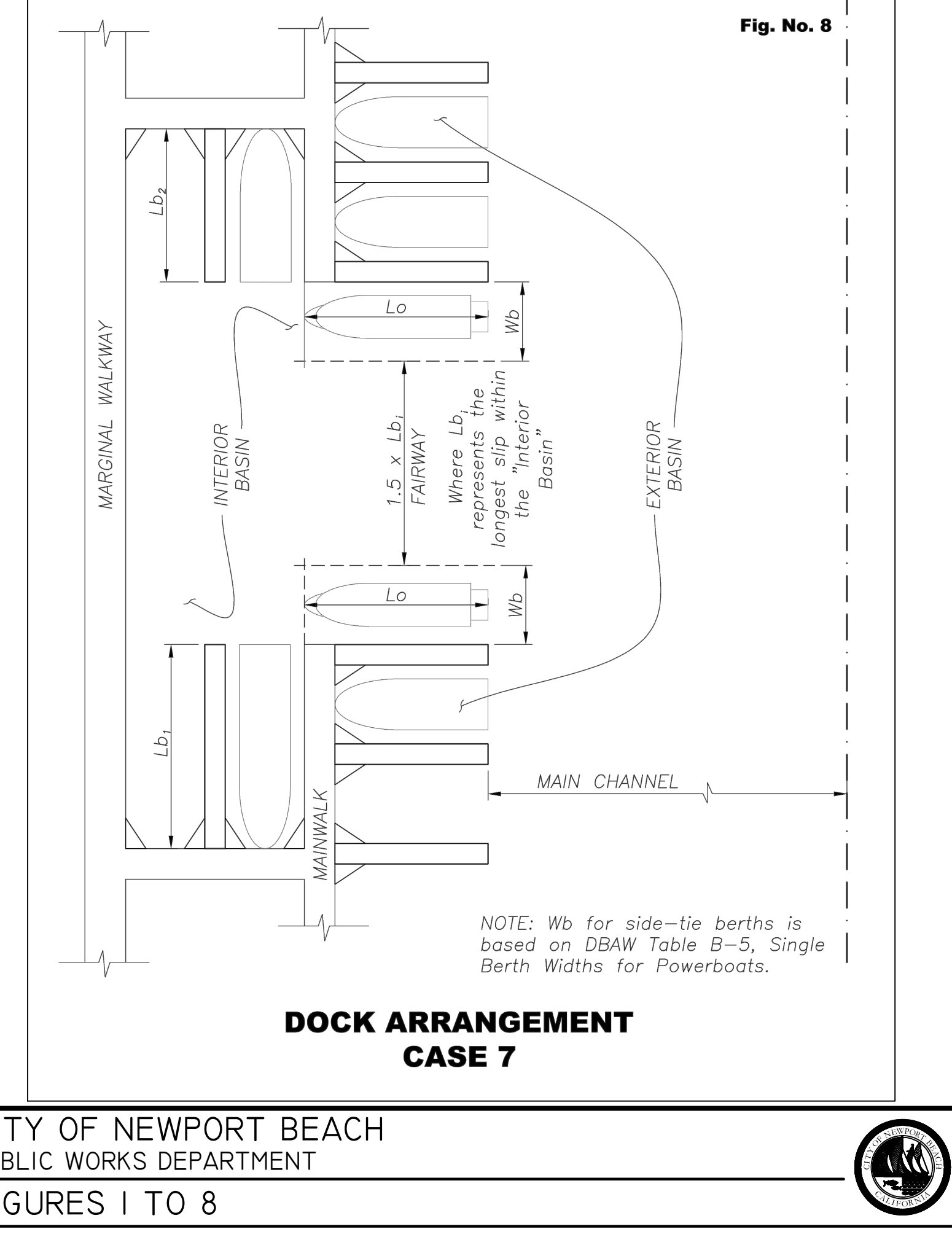
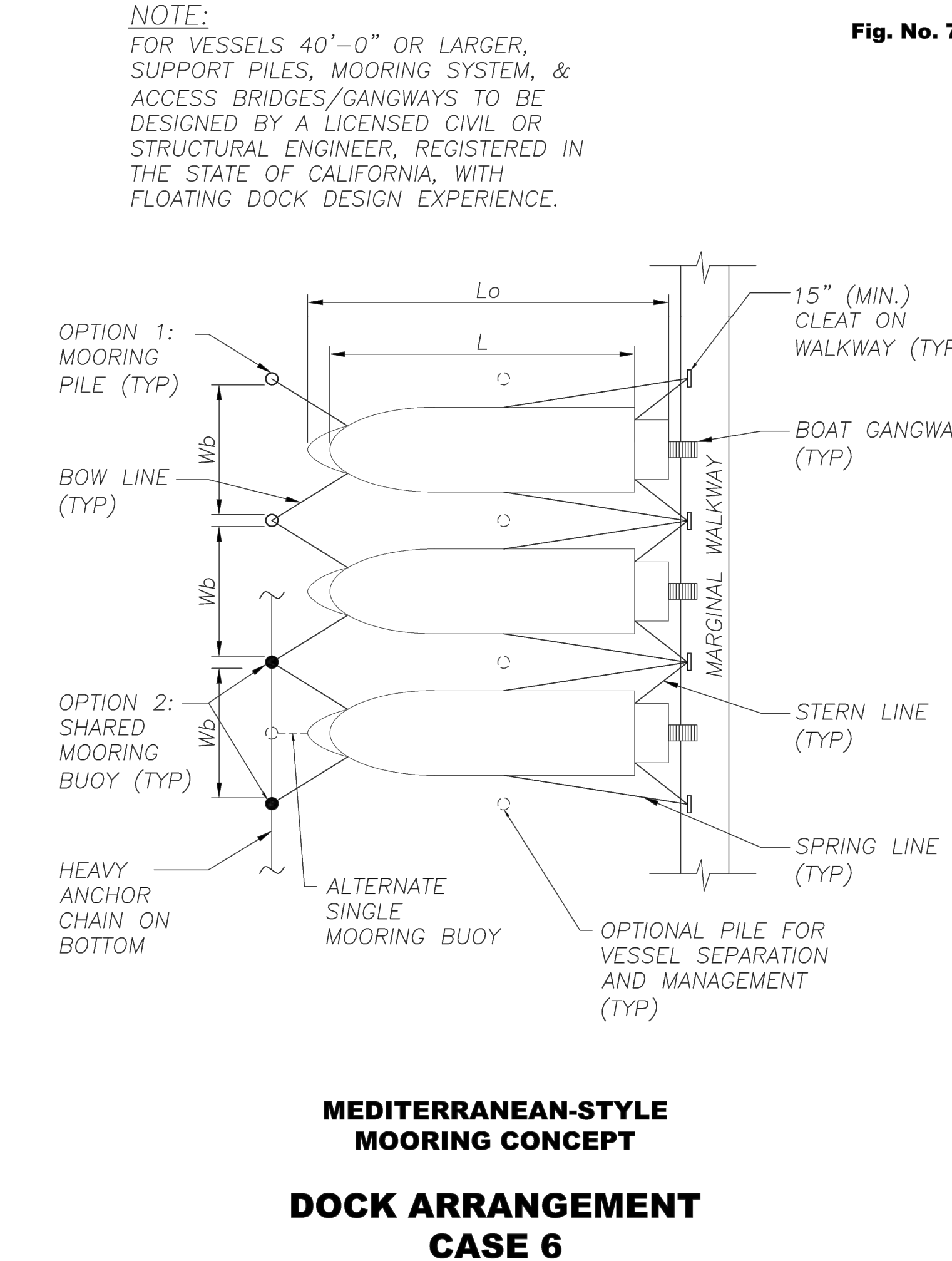
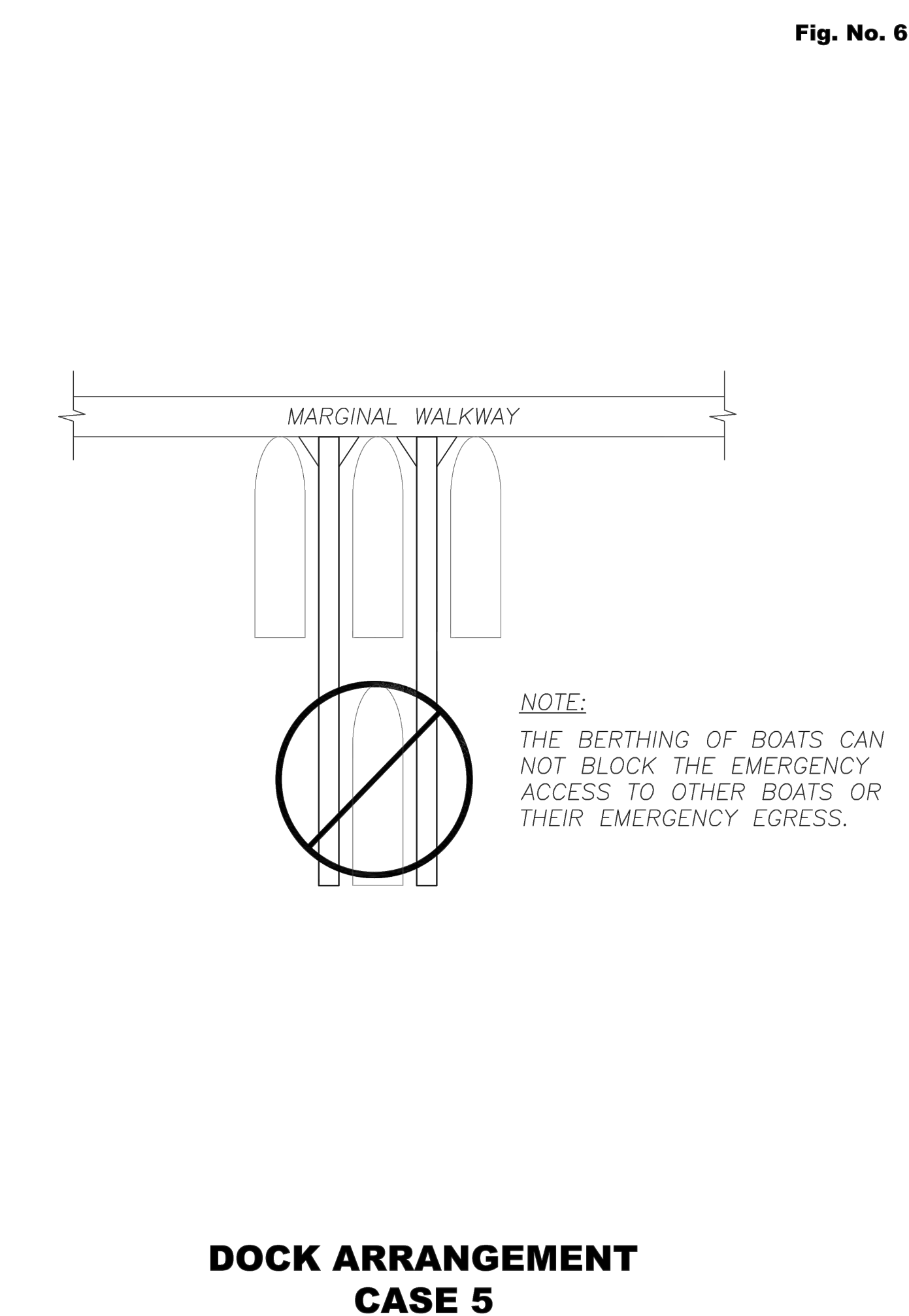
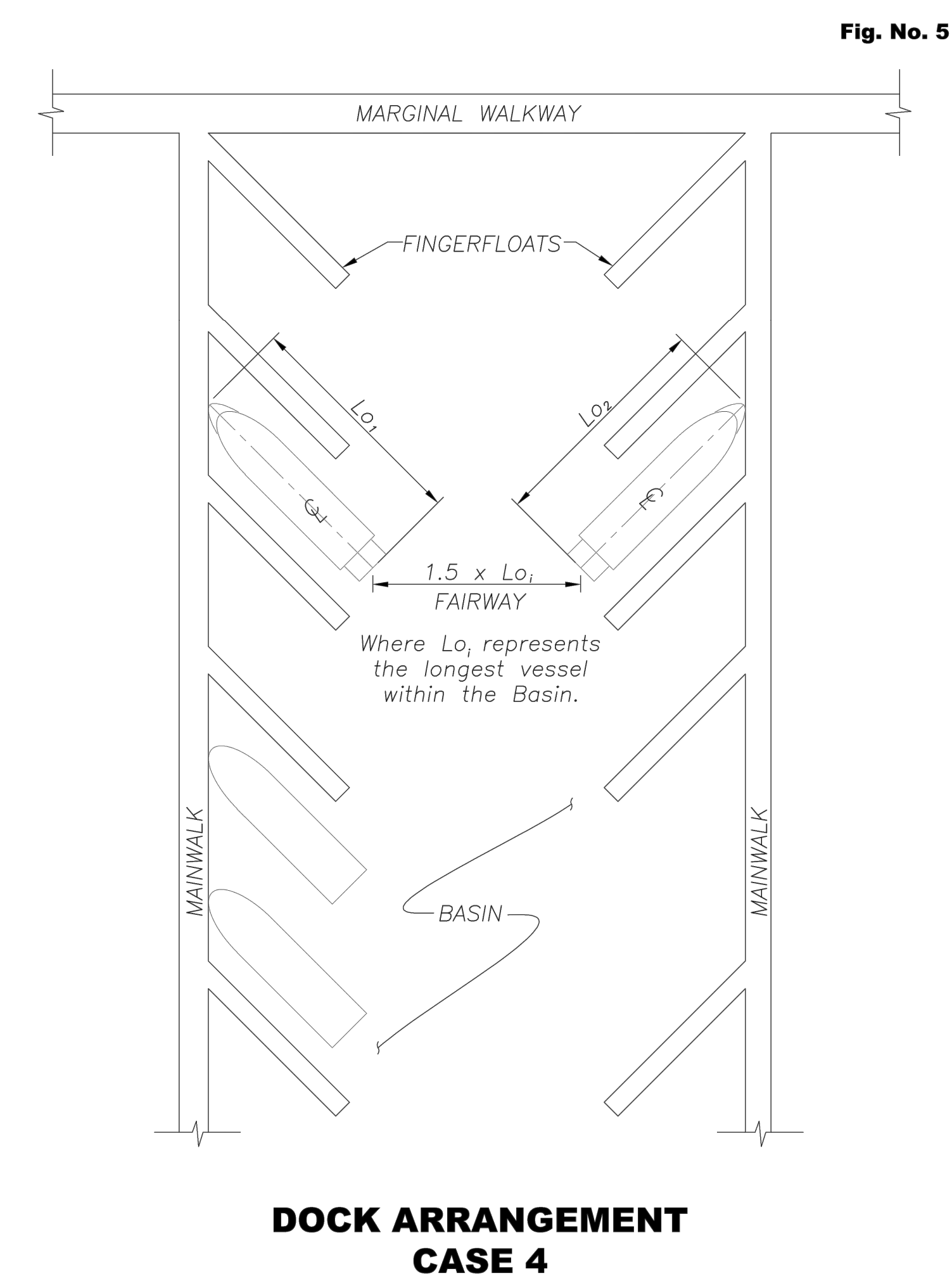
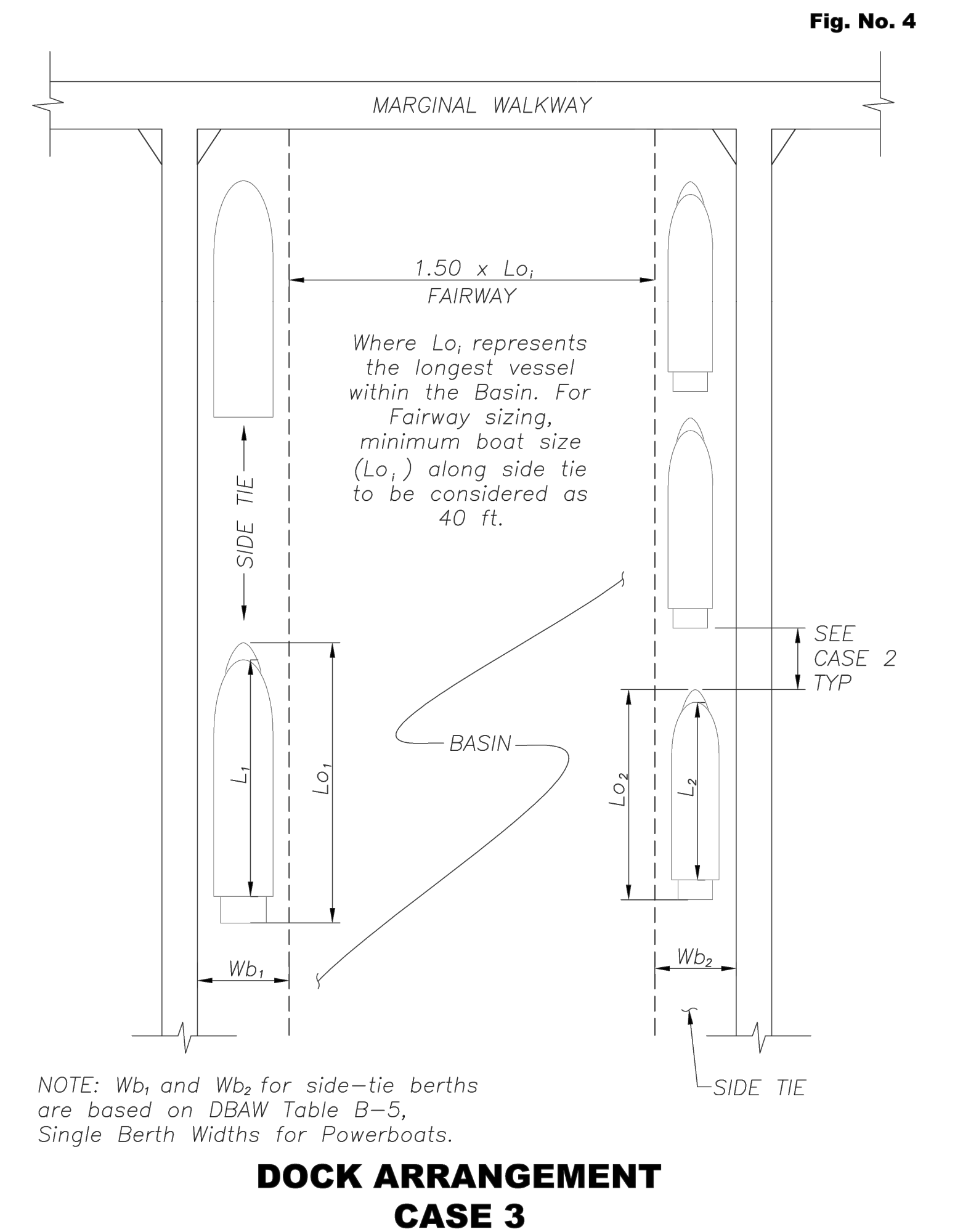
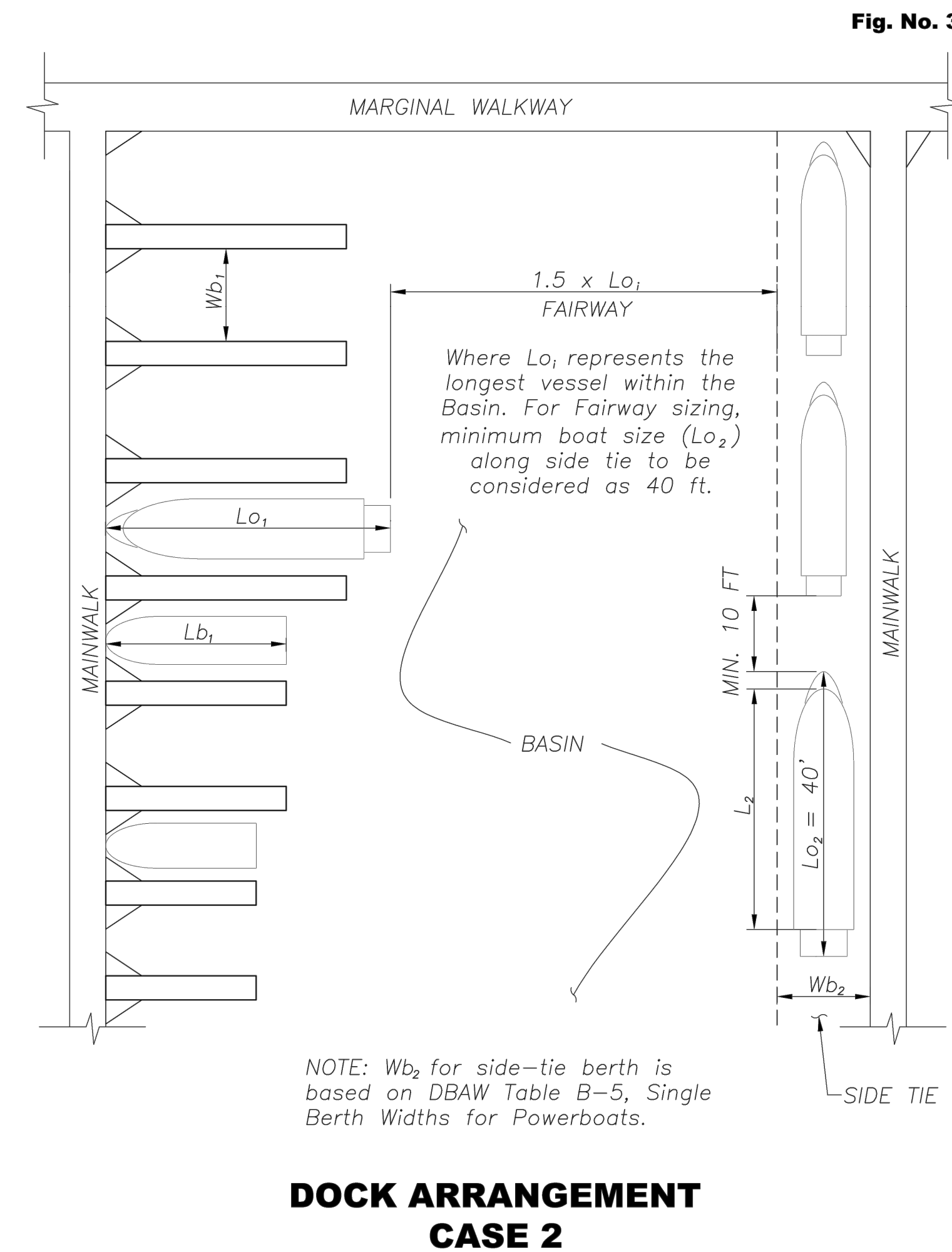
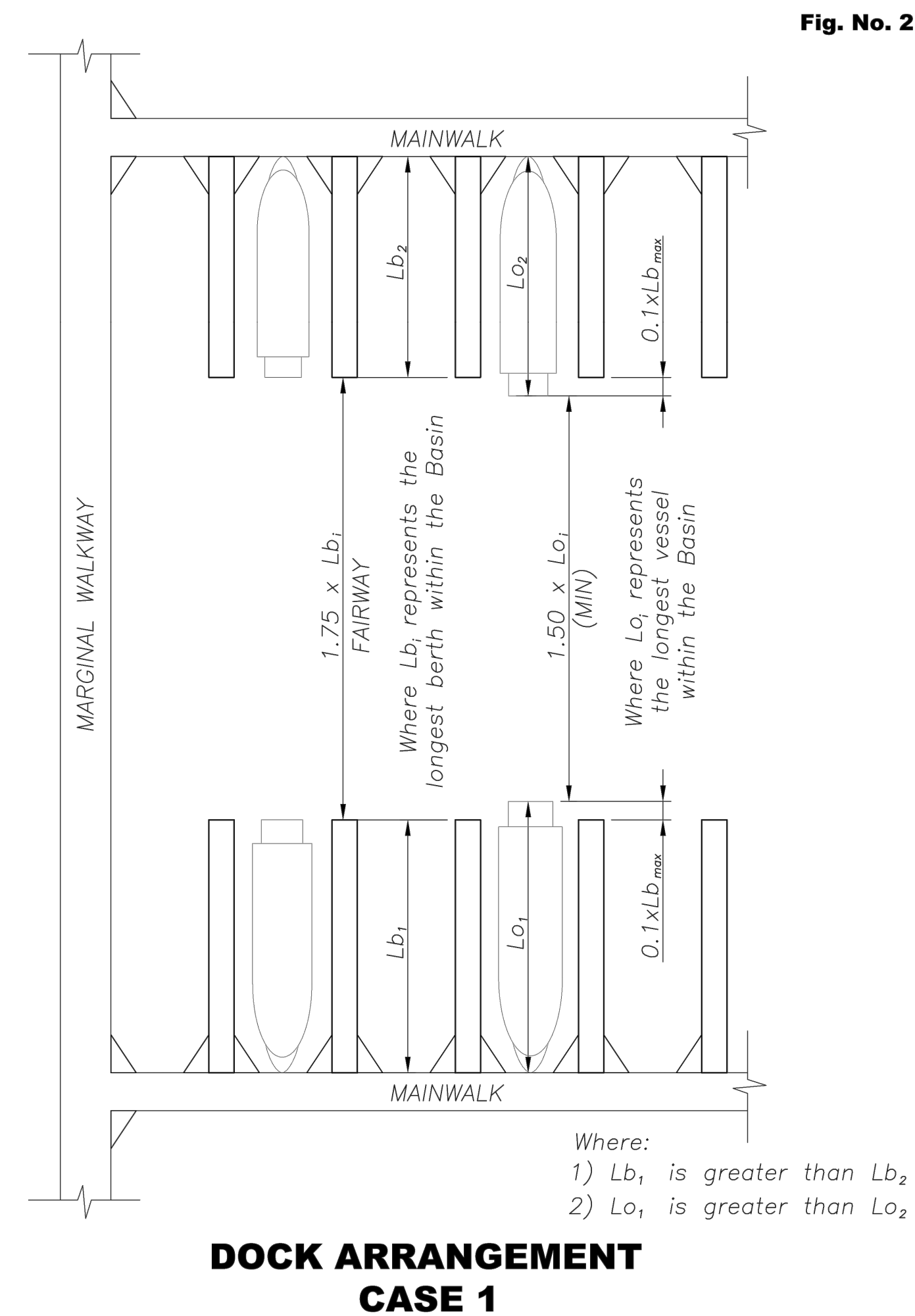
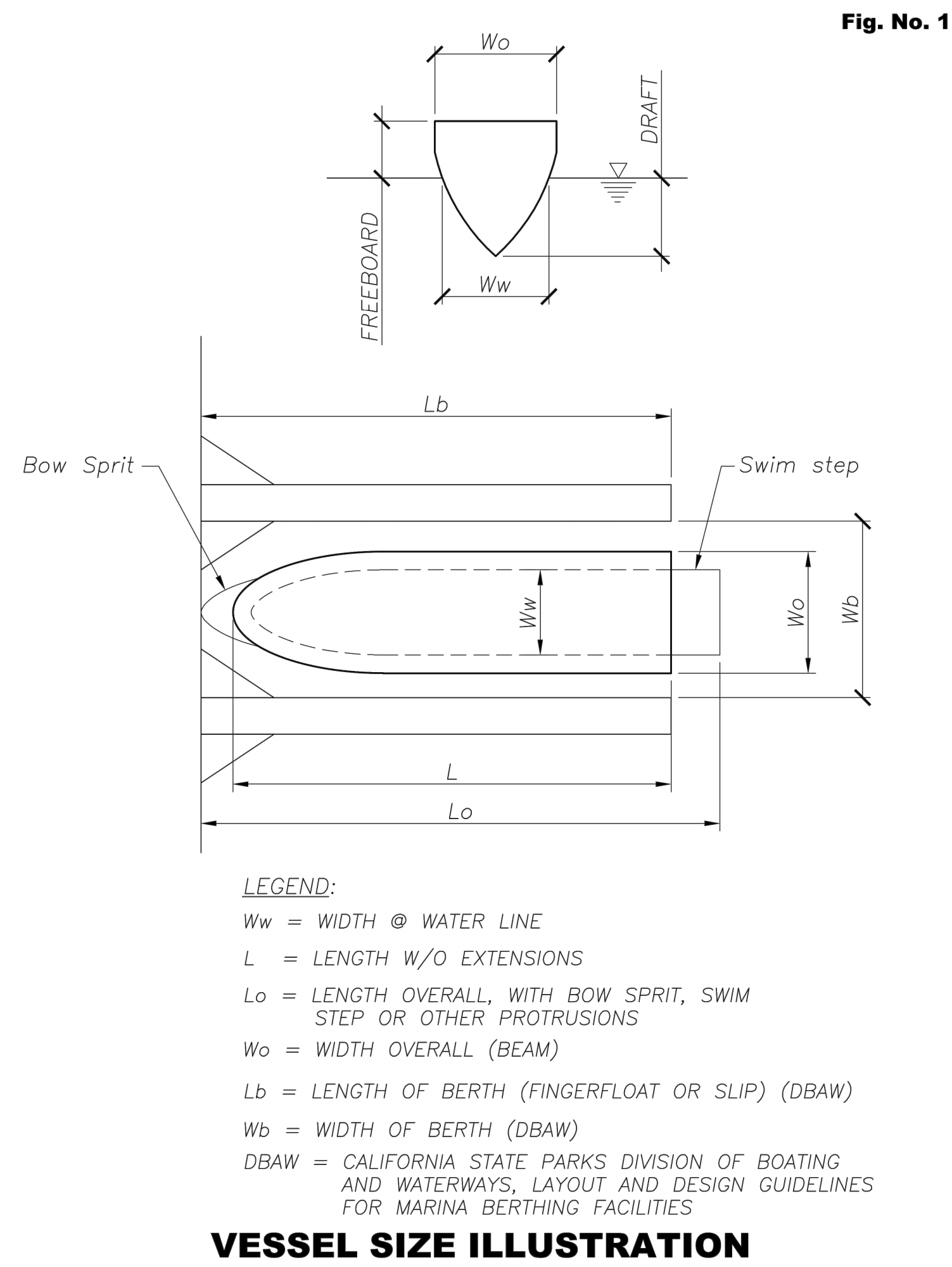
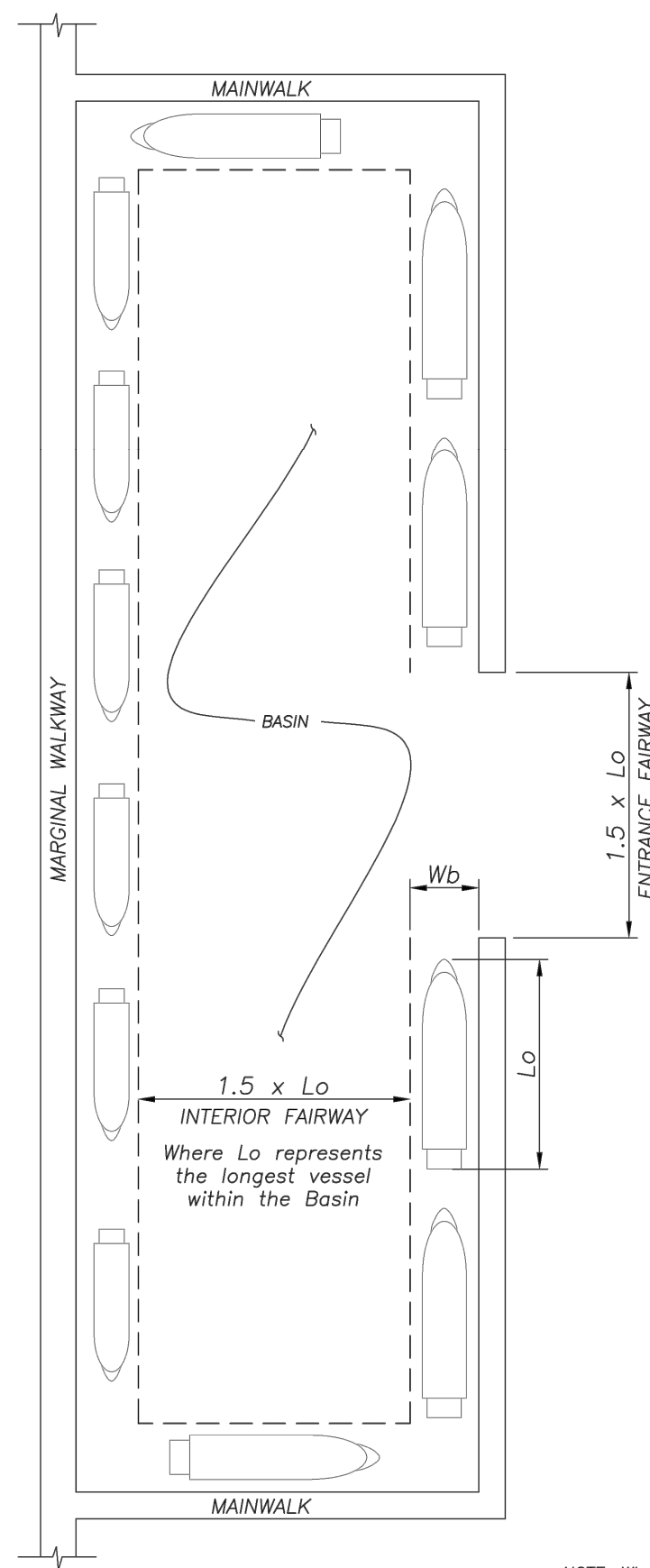
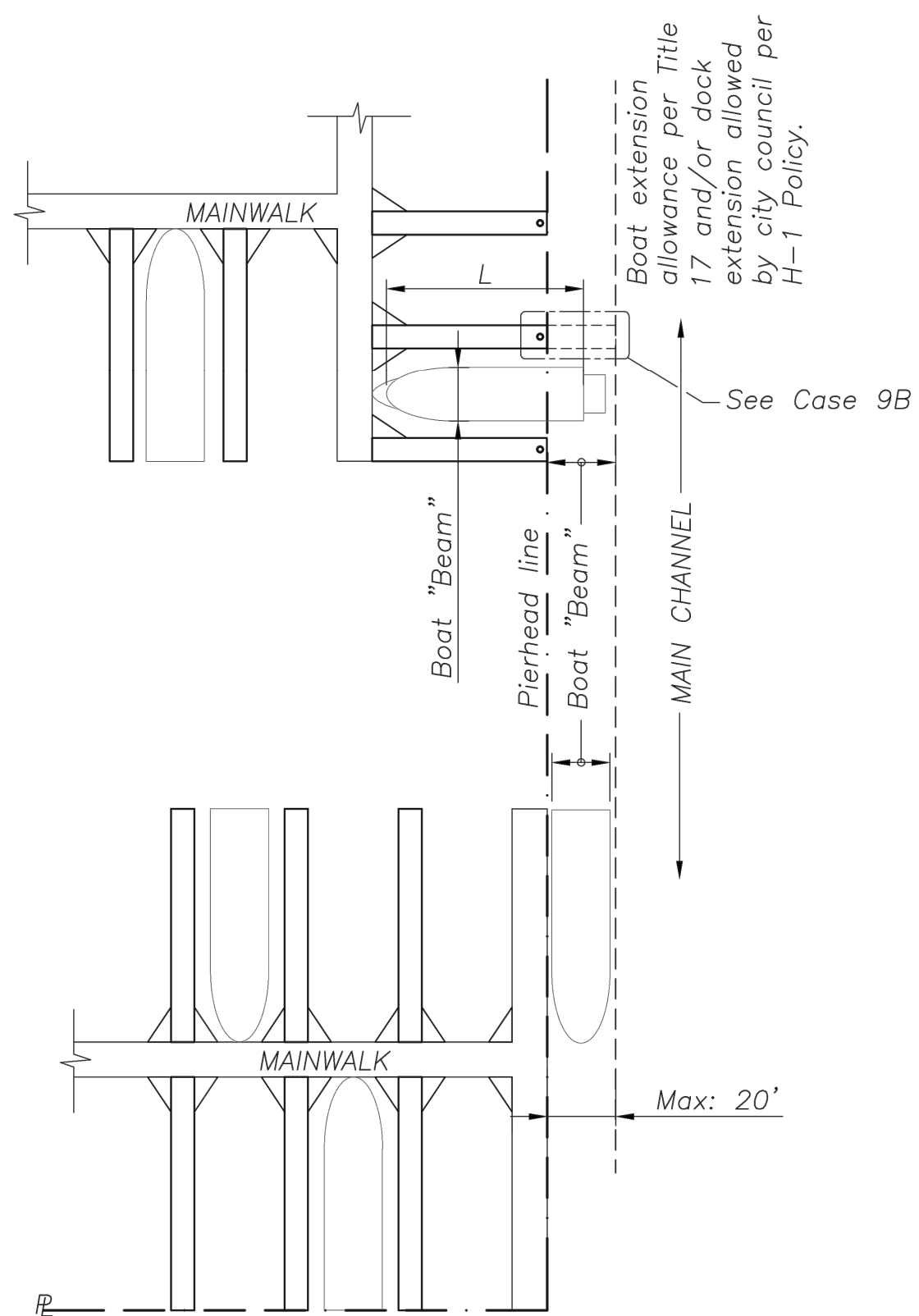


Fig. No. 9



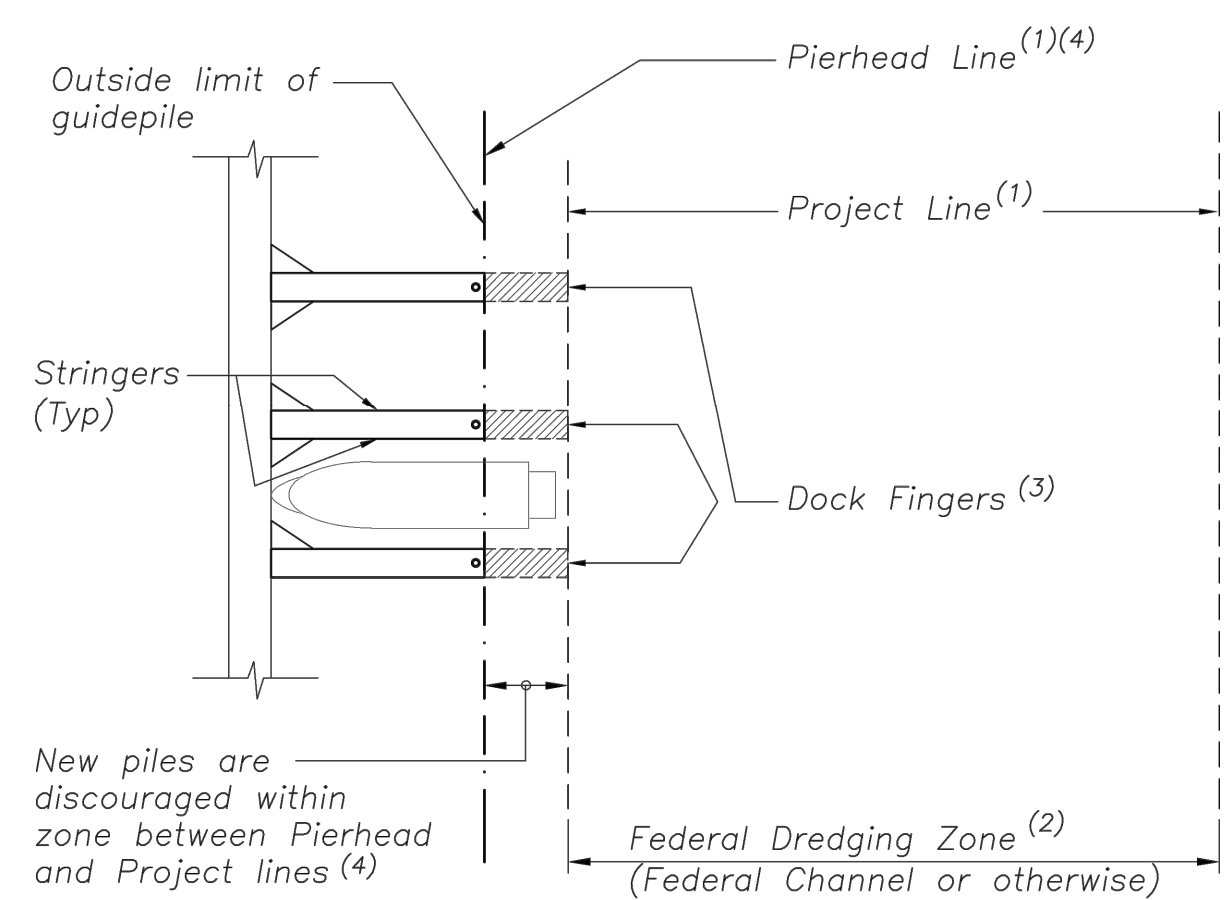
DOCK ARRANGEMENT CASE 8

Fig. No. 10



DOCK ARRANGEMENT CASE 9A

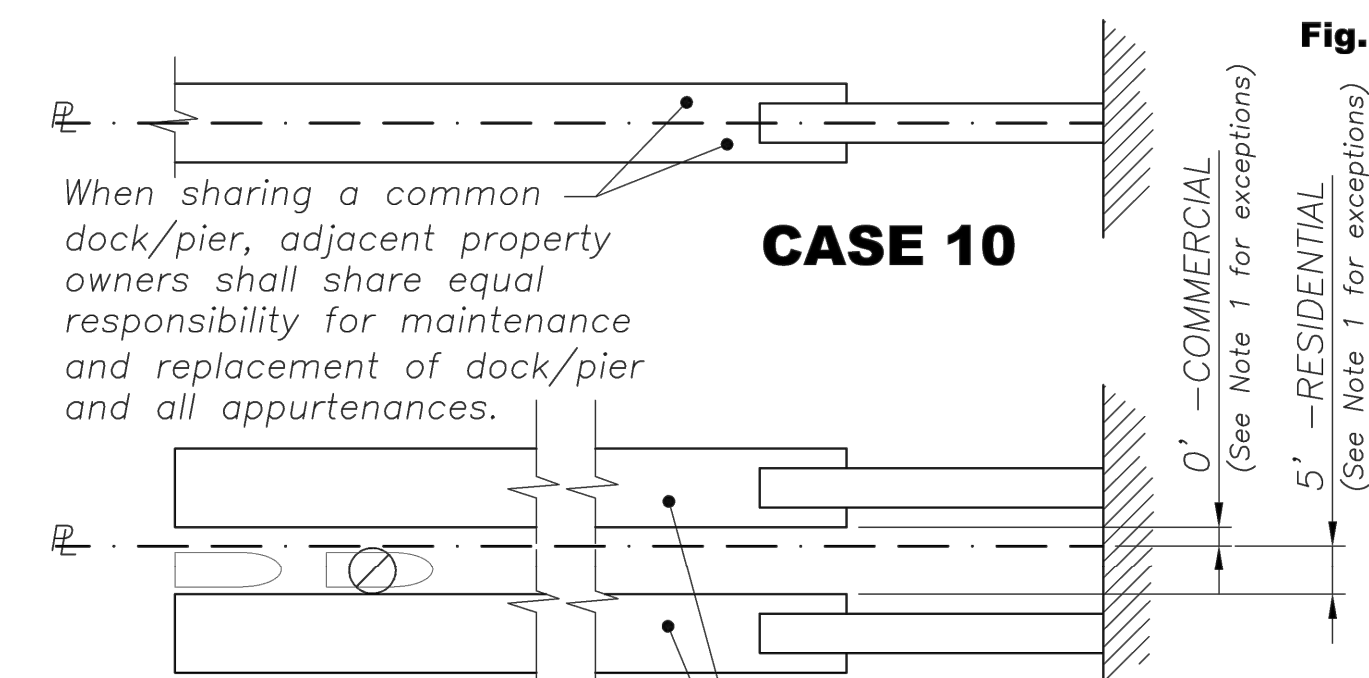
Fig. No. 10A



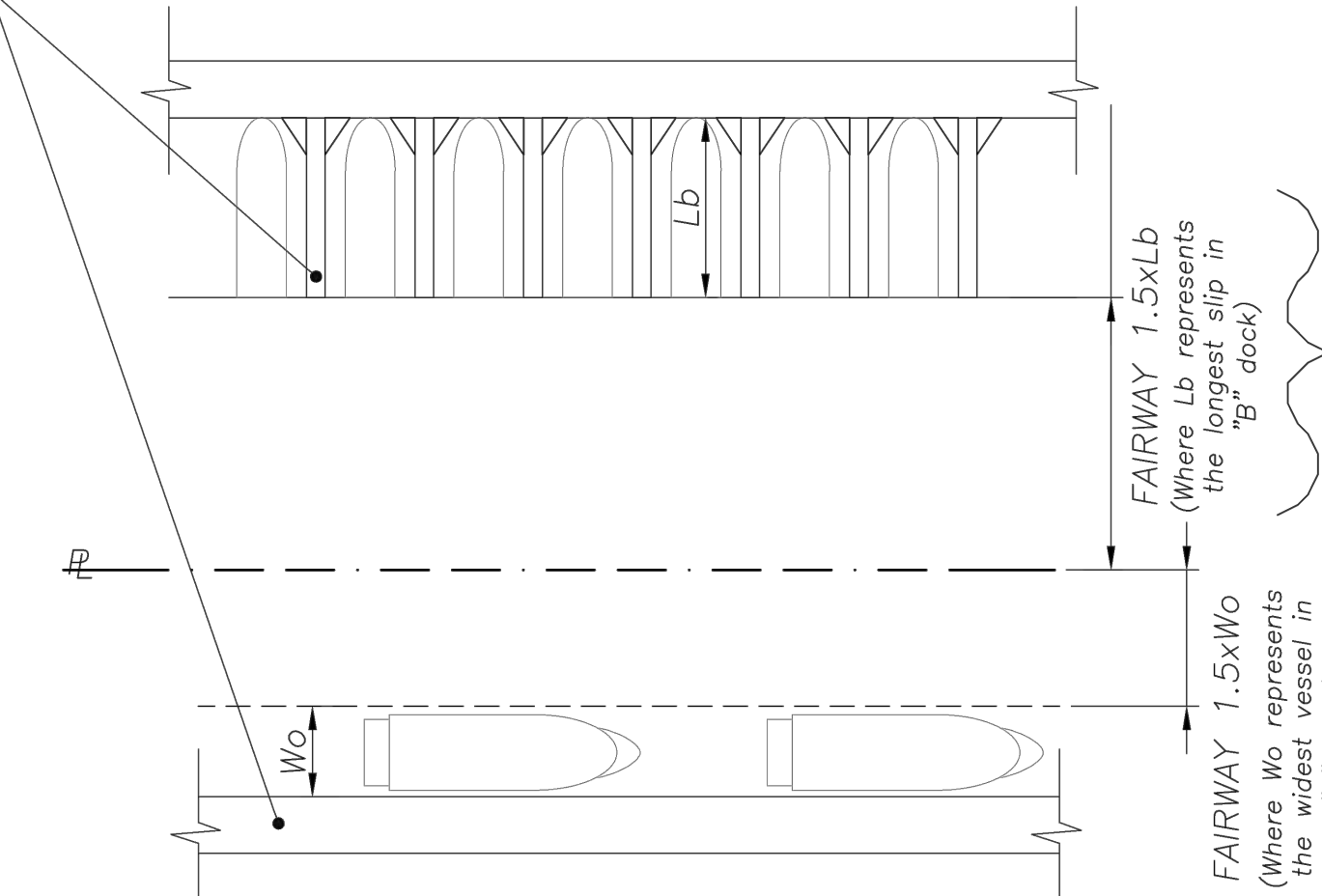
- (1) Pierhead and Project lines are established and managed by the federal government.
- (2) Portions of floating docks and/or vessels that extend into Federal Dredging Zone may be required to be removed by the dock owner at dock owner's cost when the federal government conducts periodic dredging operations.
- (3) Dock fingers must be designed and constructed in such a way that provides structural integrity of the fingers to resist lateral impact and dock line loads without guide piles at the finger ends. Continuous structural stringers and/or special moment and shear-carrying splices must be engineered and submitted to the Building Department for approval.
- (4) The City council has allowed limited exceptions for dock construction beyond the Pierhead Lines as noted in Council Policy H-1.

DOCK ARRANGEMENT CASE 9B

Fig. No. 11

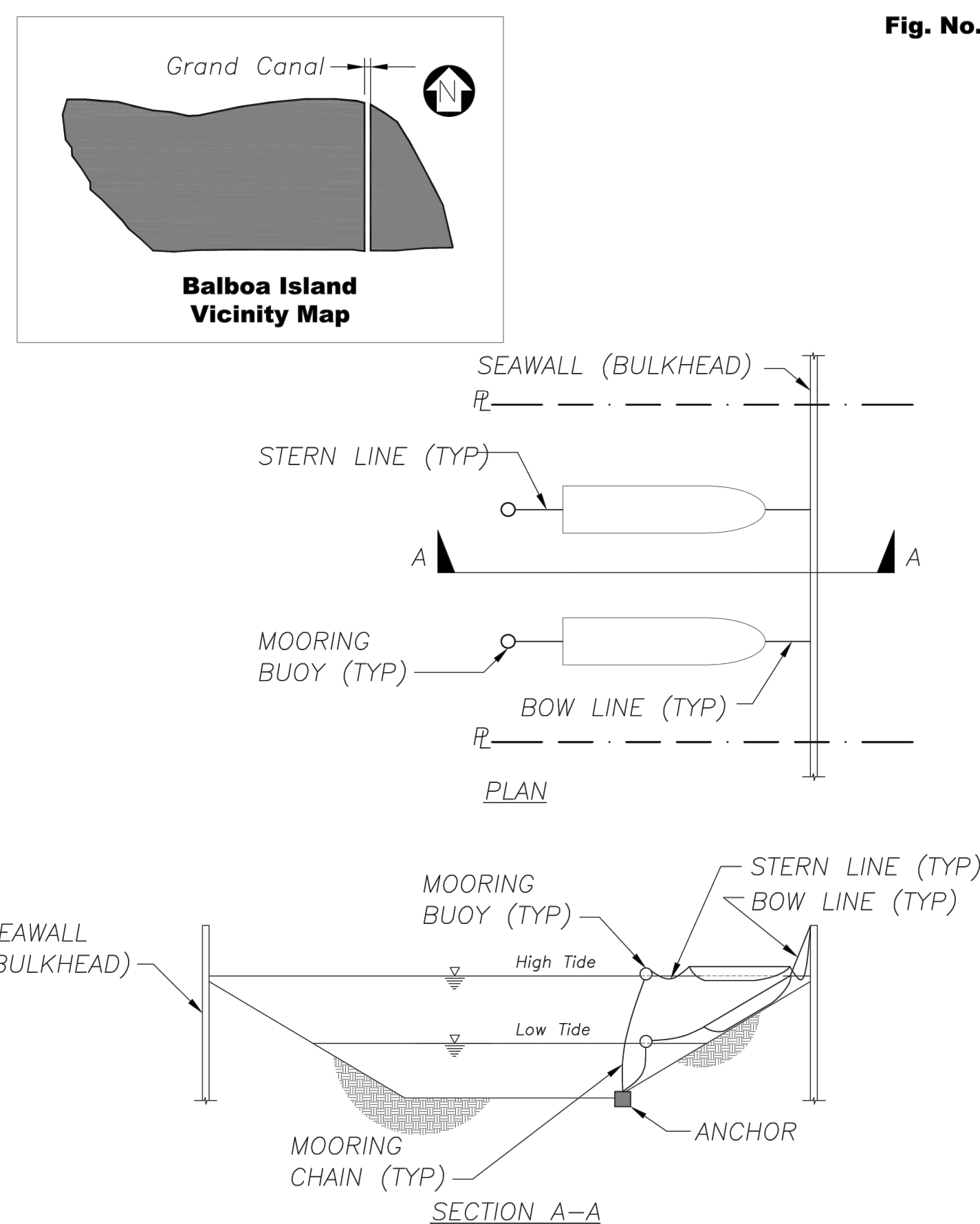


When sharing a common dock/pier, adjacent property owners shall share equal responsibility for maintenance and replacement of dock/pier and all appurtenances.



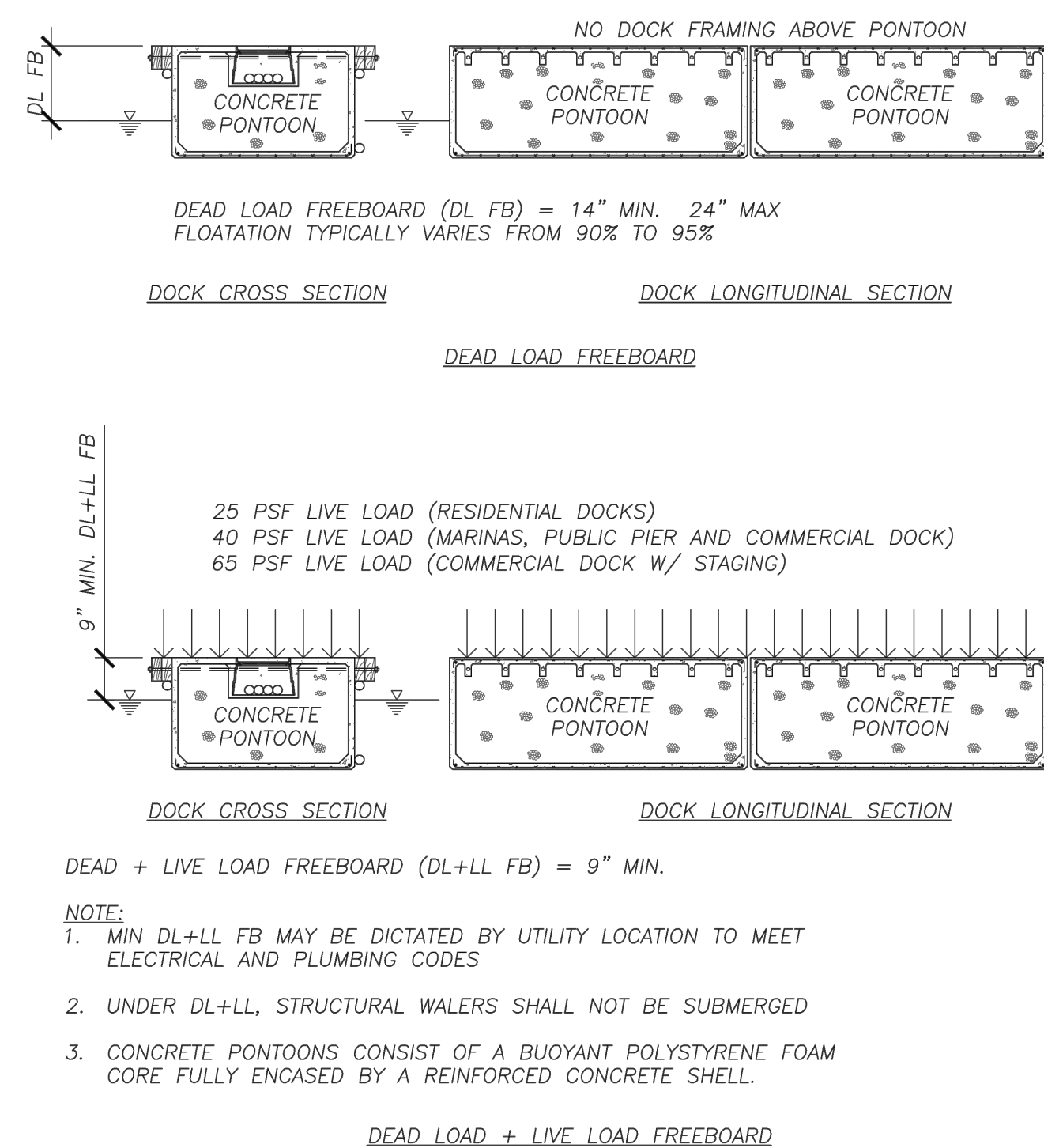
PROPERTY LINE CONDITIONS

Fig. No. 12



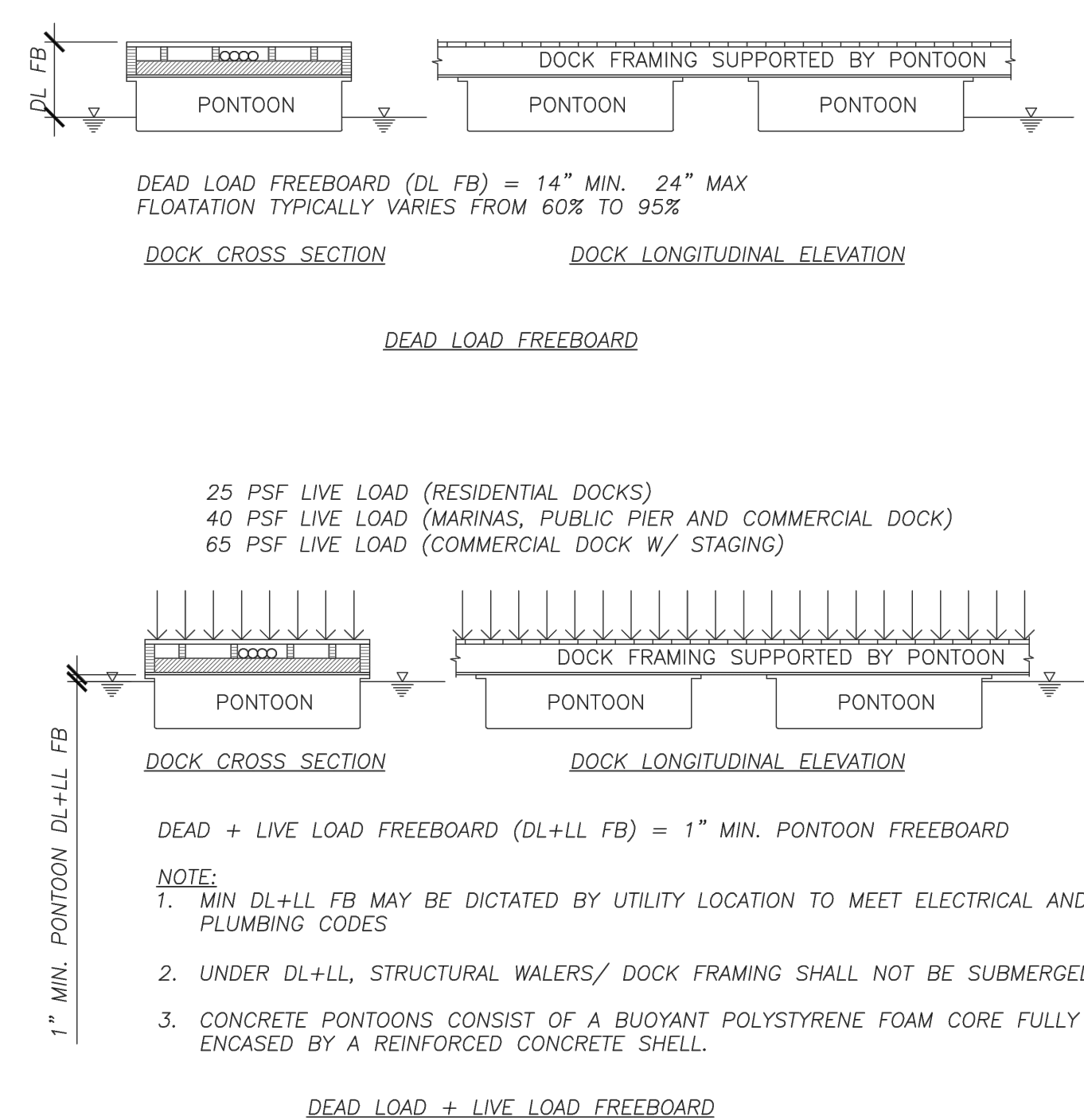
DOCK ARRANGEMENT CASE 13 (Grand Canal Only)

Fig. No. 13



DOCK WITH NO FRAMING SUPPORTED ON PONTOONS (TYPICAL CONCRETE DOCK SYSTEM)

Fig. No. 14



DEAD + LIVE LOAD FREEBOARD FOR DOCKS WITH FRAMING SUPPORTED ON PONTOONS (TYPICAL TIMBER, ALUMINUM, STEEL, FIBERGLASS FRAMING DOCK SYSTEM)

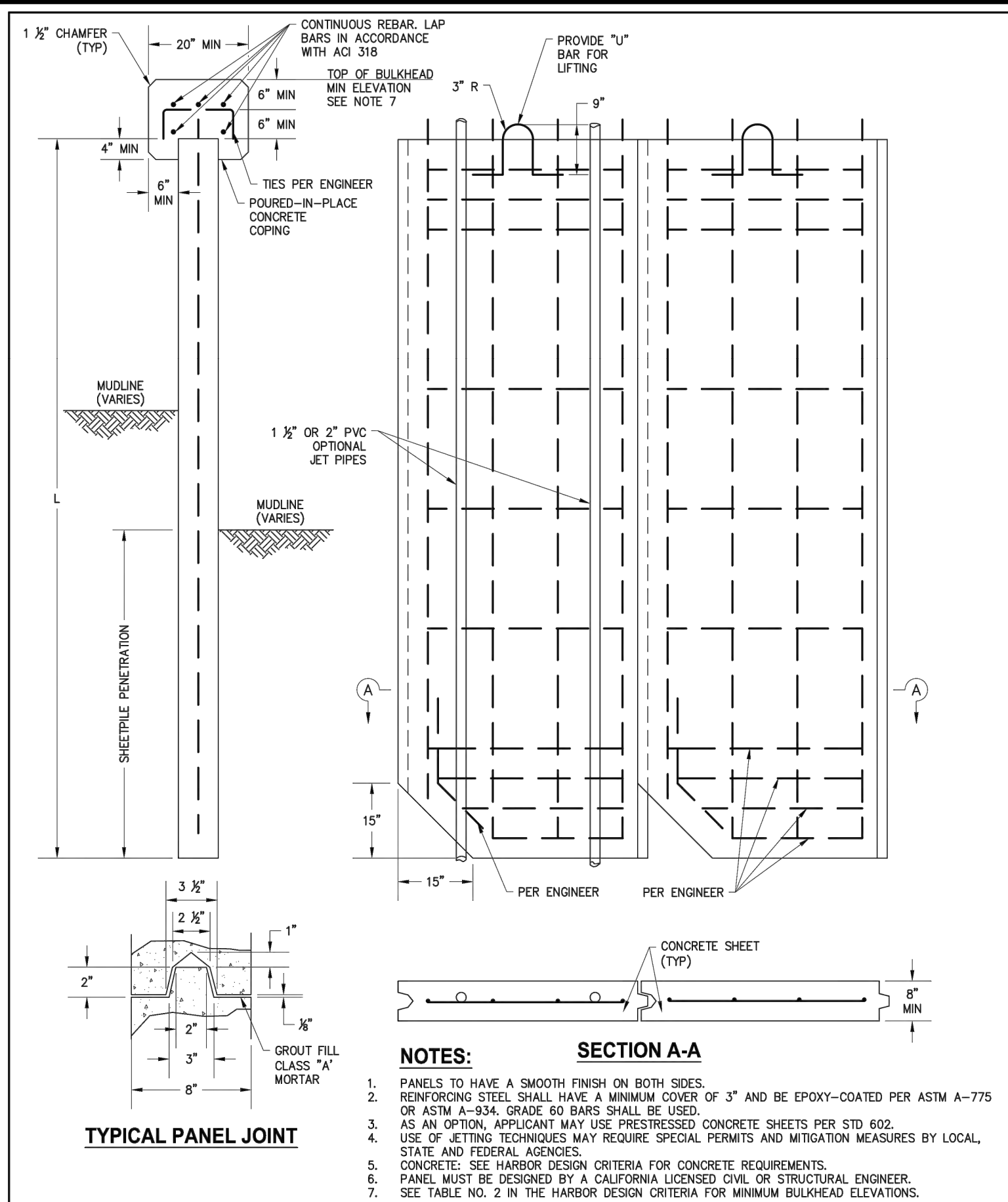
CITY OF NEWPORT BEACH
PUBLIC WORKS DEPARTMENT
FIGURES 9 TO 14



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APP: *Jmw m shall* RCE 51568 DATE: 11/24/2020

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

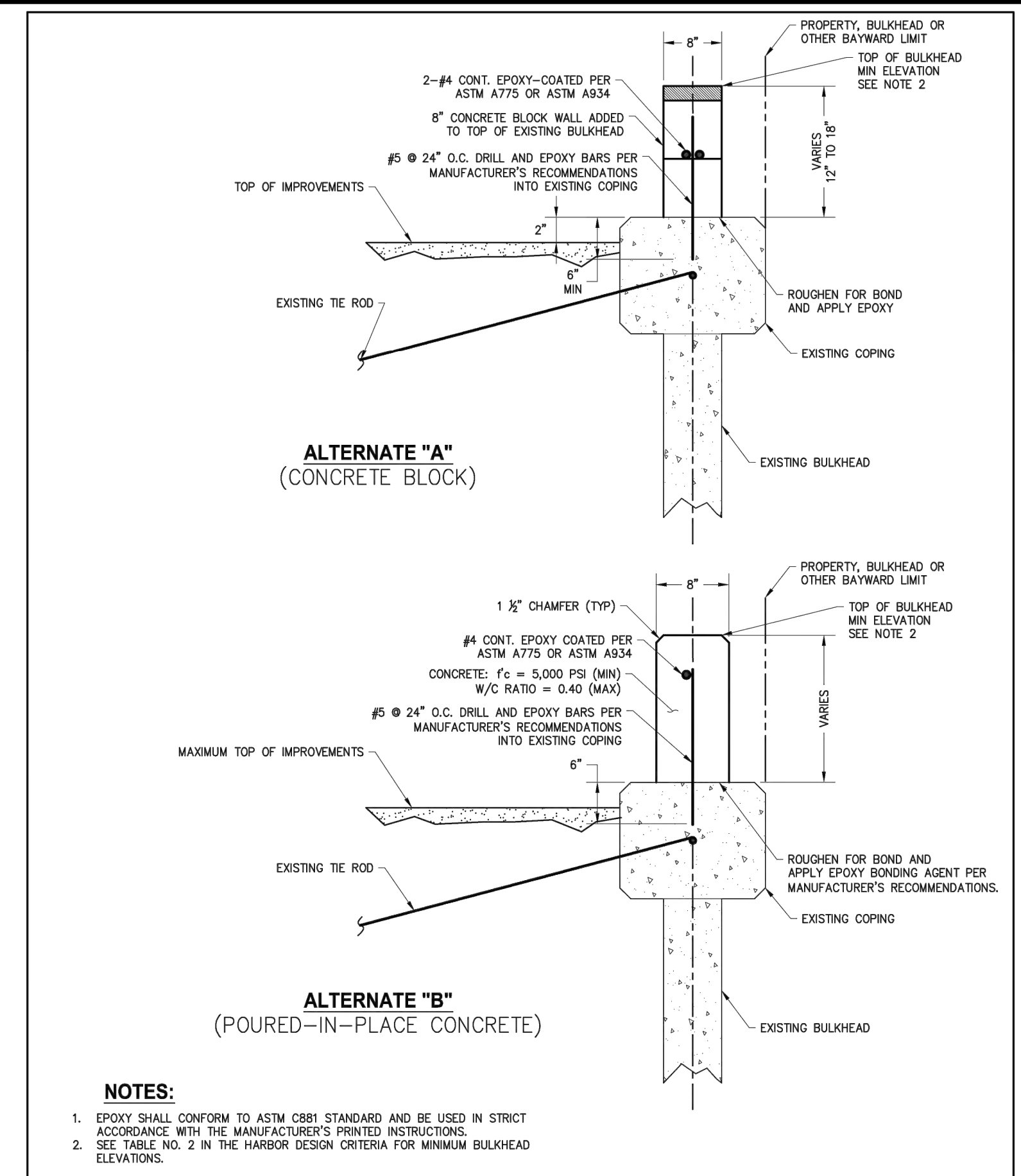
DRAWN: P. KHARAZMI

DATE: 11/3/2020

PRECAST REINFORCED CONCRETE GROIN PANEL (NOT FOR BULKHEAD USE)

STANDARD DRAWING NO. **600**

SHEET 1 OF 1



APP: *Jmw m shall* RCE 51568 DATE: 11/24/2020

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

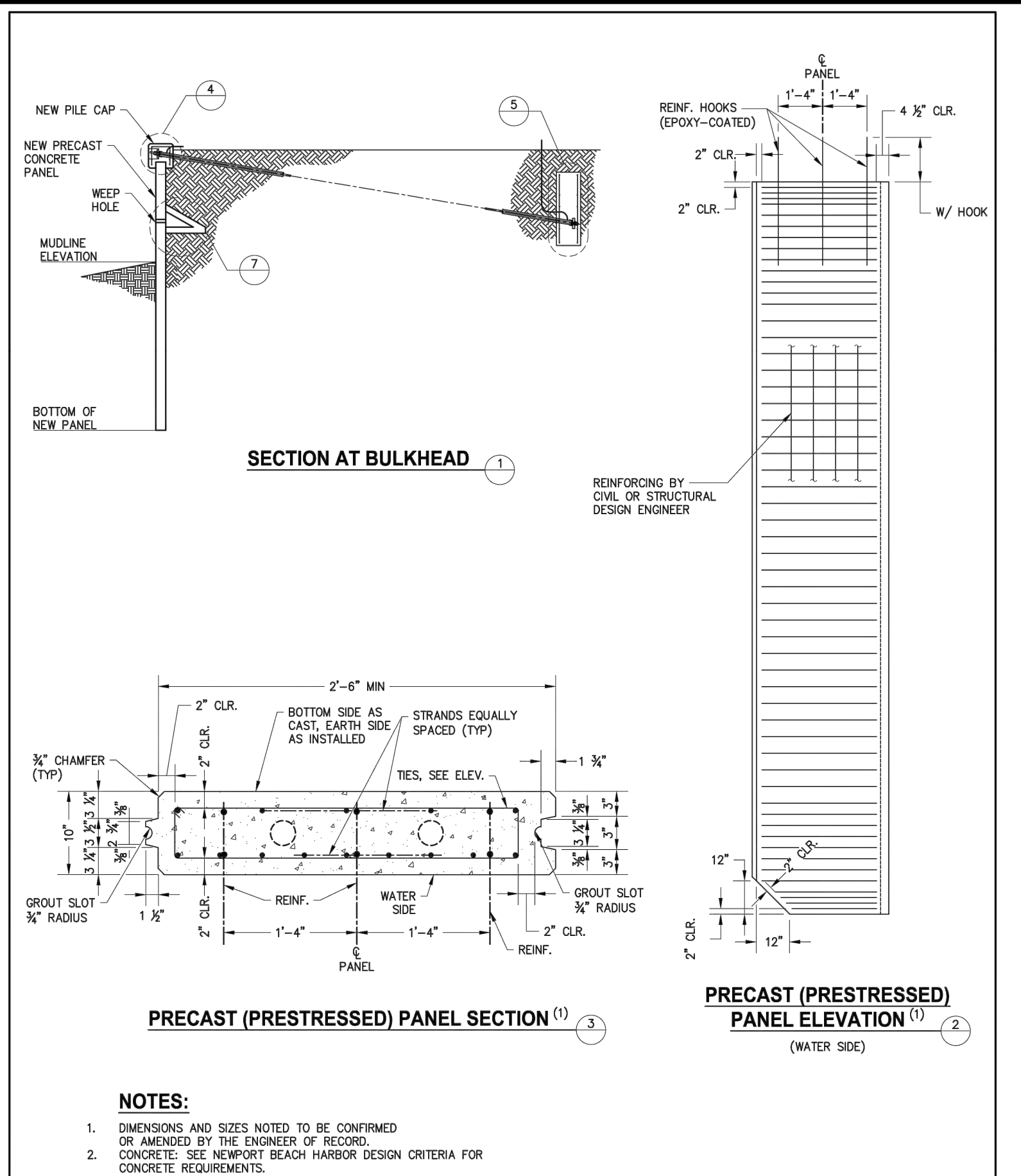
DRAWN: P. KHARAZMI

DATE: 11/3/2020

DETAIL FOR RAISING BULKHEADS

STANDARD DRAWING NO. **601**

SHEET 1 OF 1



APP: *Jmw m shall* RCE 51568 DATE: 11/24/2020

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

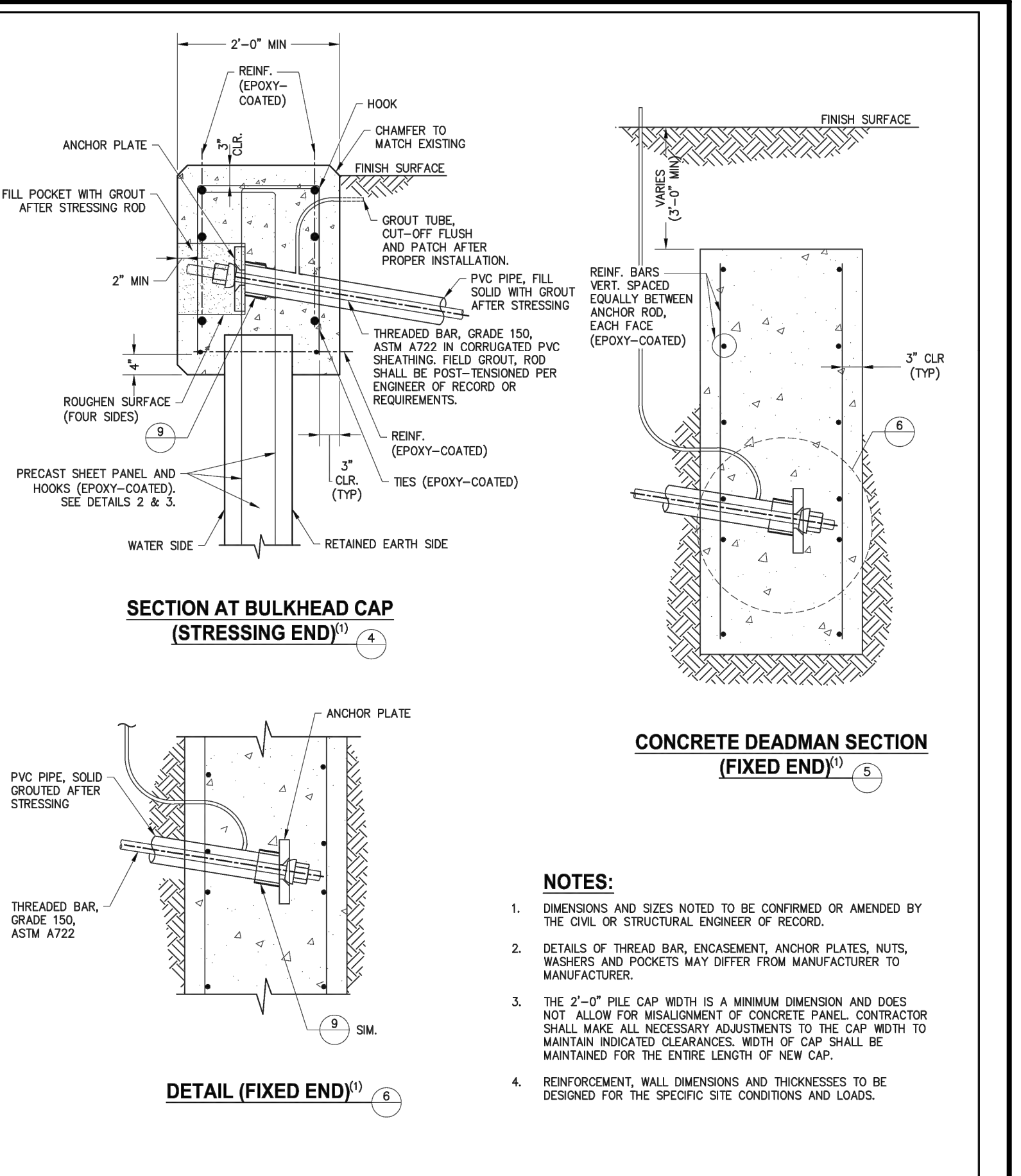
DRAWN: P. KHARAZMI

DATE: 11/3/2020

BULKHEAD & PRECAST PANEL SECTION & ELEVATION

STANDARD DRAWING NO. **602**

SHEET 1 OF 3



APP: *Jmw m shall* RCE 51568 DATE: 11/24/2020

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

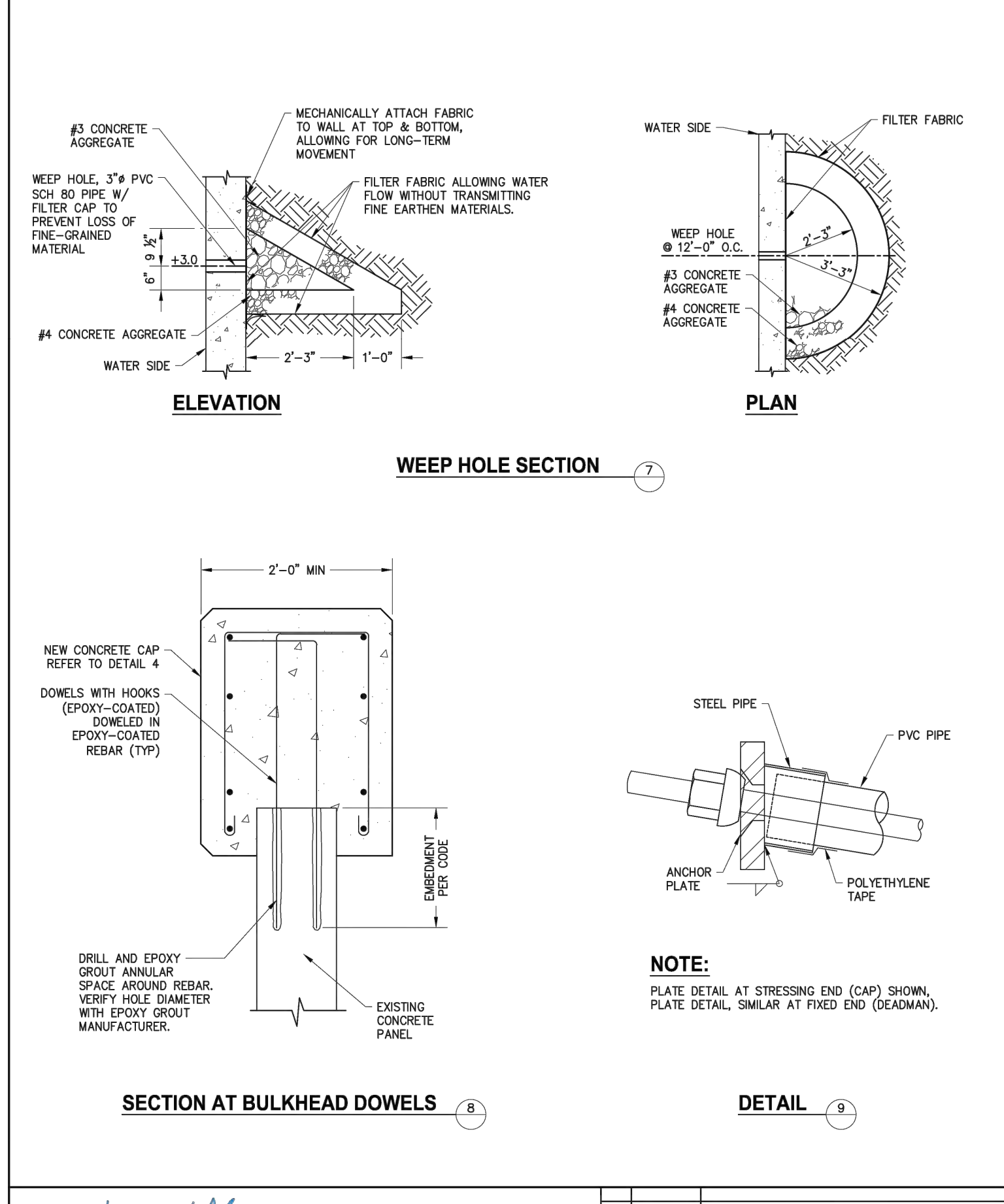
DRAWN: P. KHARAZMI

DATE: 11/3/2020

BULKHEAD CAP & DEADMAN SECTIONS & DETAIL

STANDARD DRAWING NO. **602**

SHEET 2 OF 3



APP: *Jmw m shall* RCE 51568 DATE: 11/24/2020

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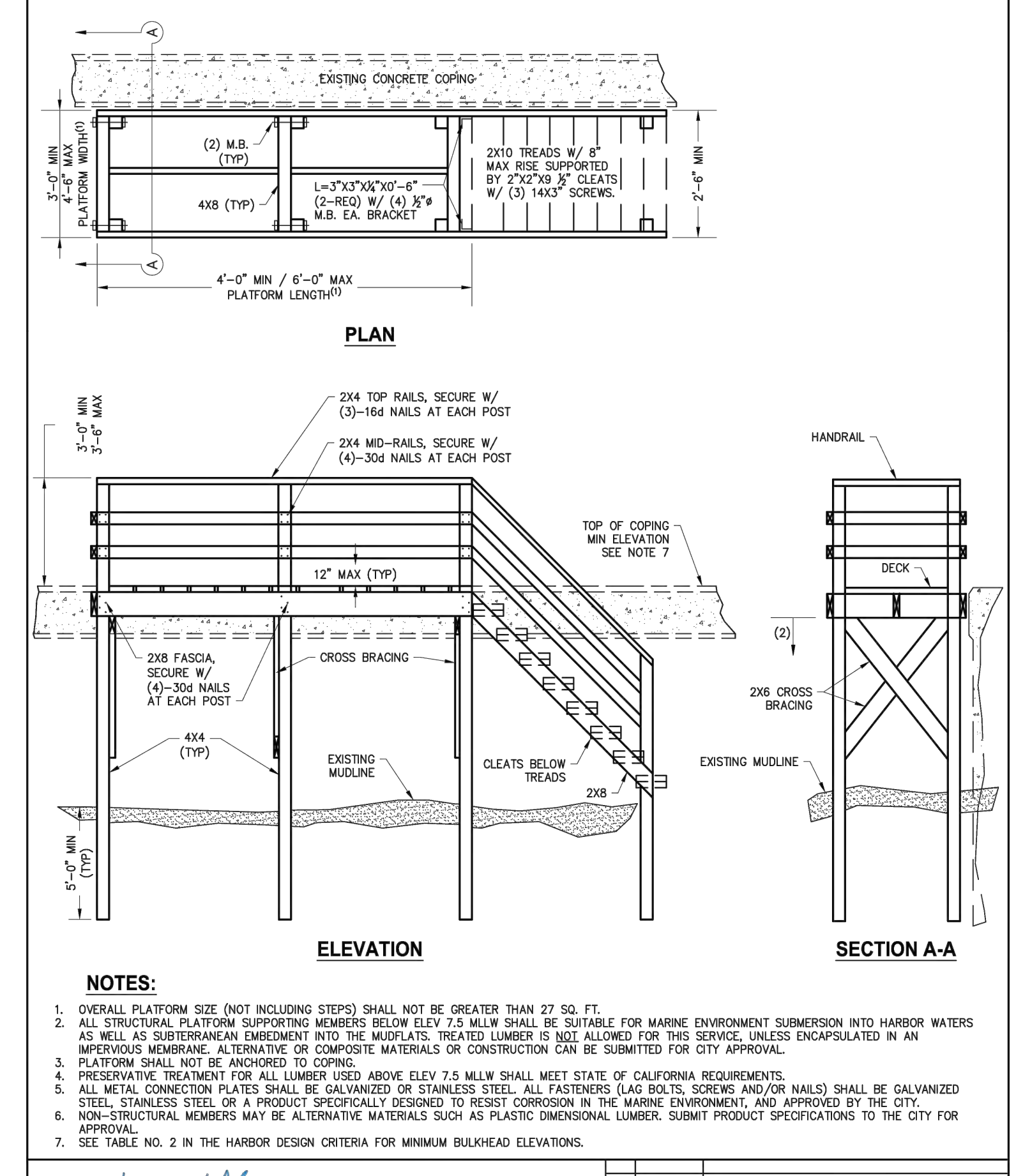
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DATE: 11/3/2020

BULKHEAD SECTIONS & DETAILS

STANDARD DRAWING NO. **602**

SHEET 3 OF 3



APP: *Jmw m shall* RCE 51568 DATE: 11/24/2020

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

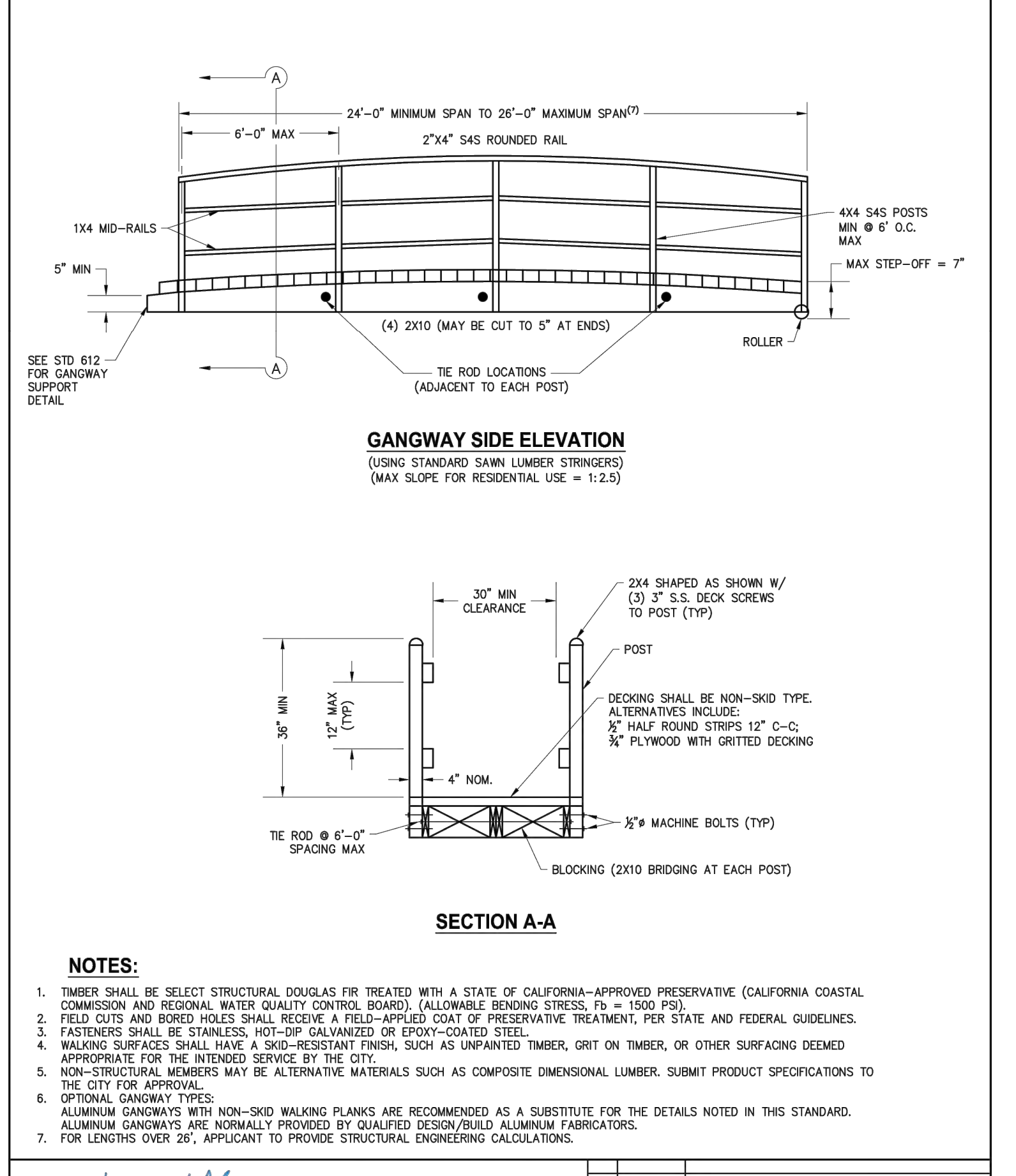
DRAWN: P. KHARAZMI

DATE: 11/3/2020

GRAND CANAL - PLATFORM & STEPS

STANDARD DRAWING NO. **603**

SHEET 1 OF 1



APP: *Jmw m shall* RCE 51568 DATE: 11/24/2020

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

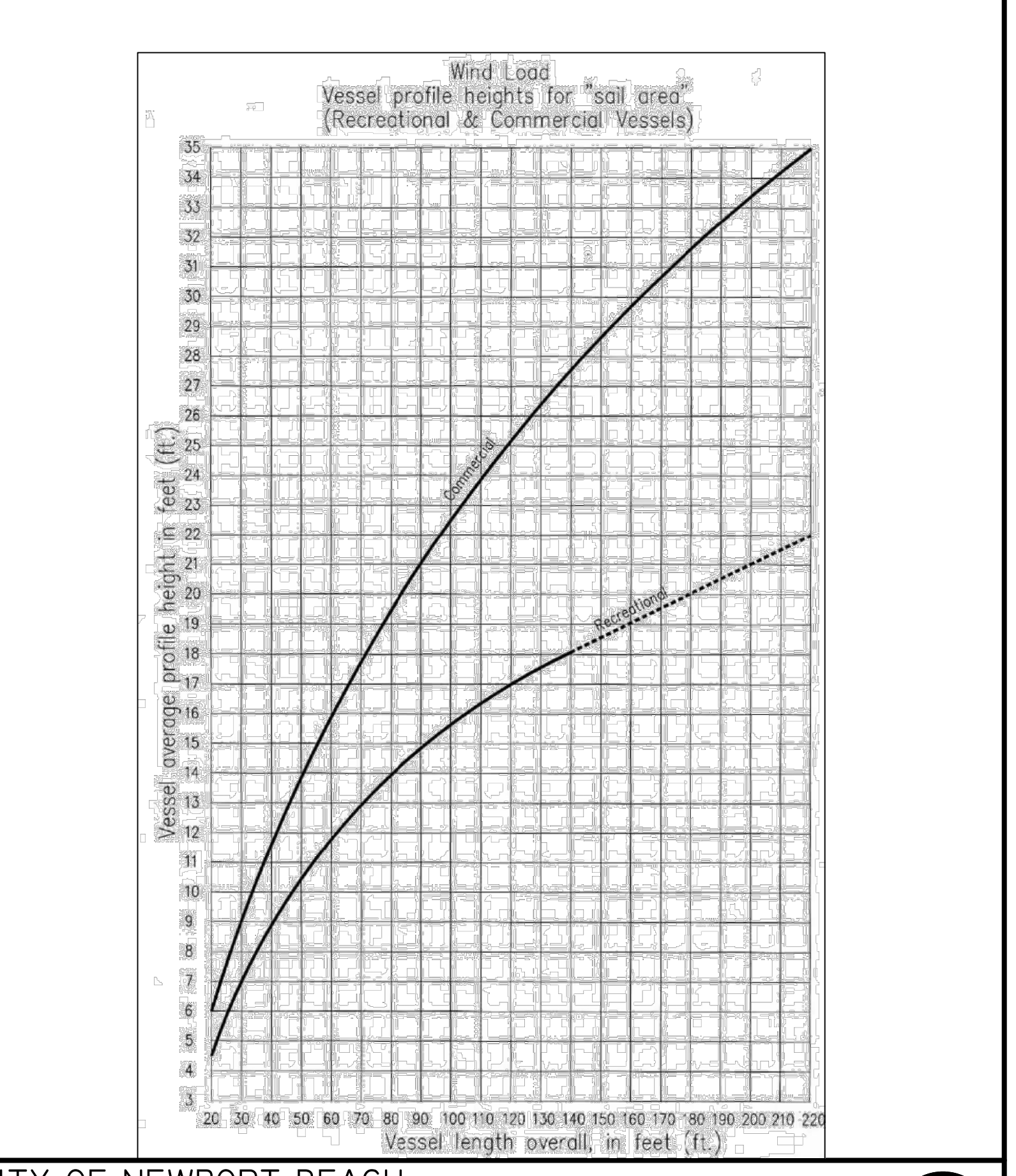
DRAWN: P. KHARAZMI

DATE: 11/3/2020

SINGLE OR JOINT RESIDENTIAL USE GANGWAY

STANDARD DRAWING NO. **604**

SHEET 1 OF 1



CITY OF NEWPORT BEACH
PUBLIC WORKS DEPARTMENT

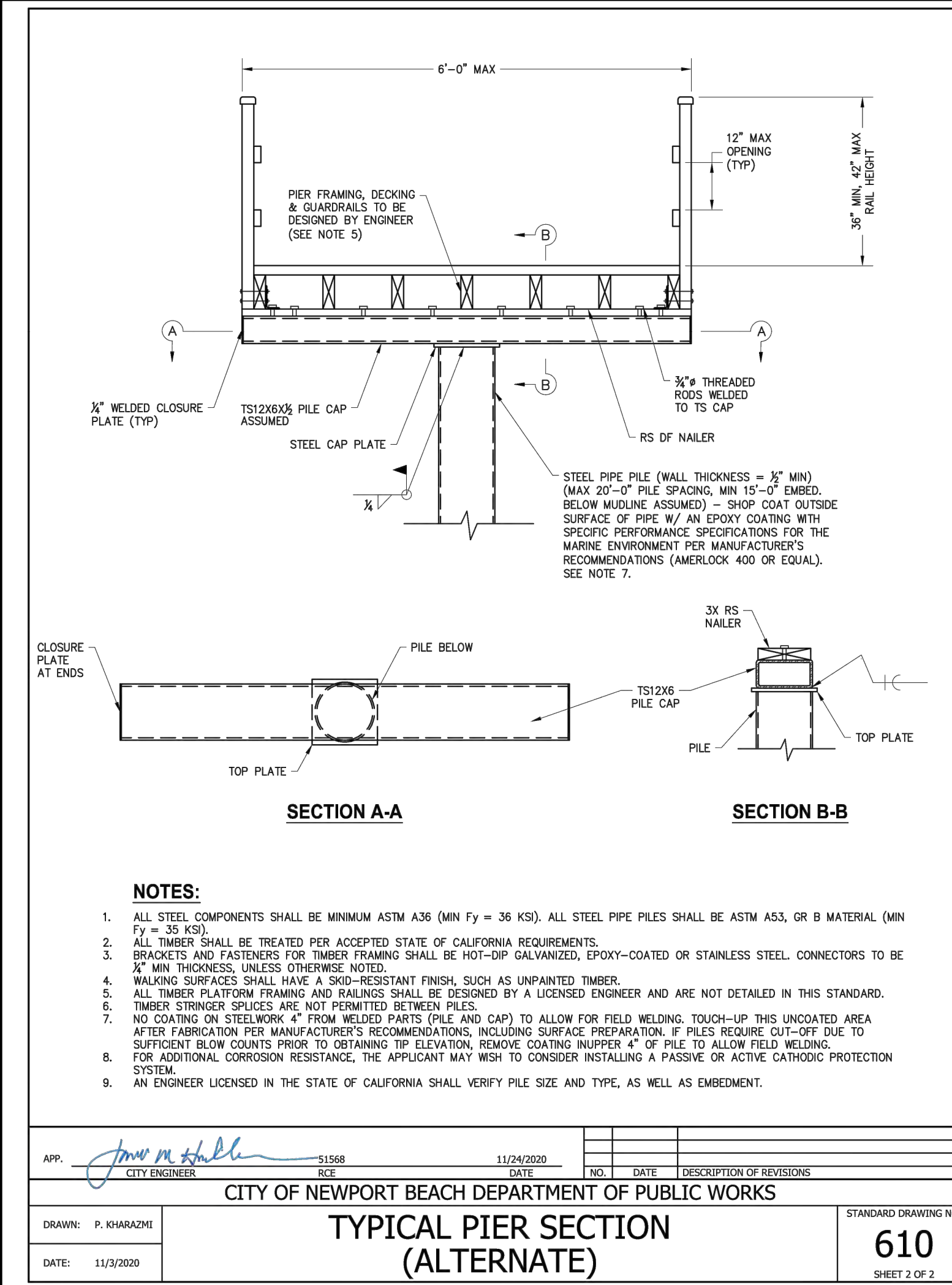
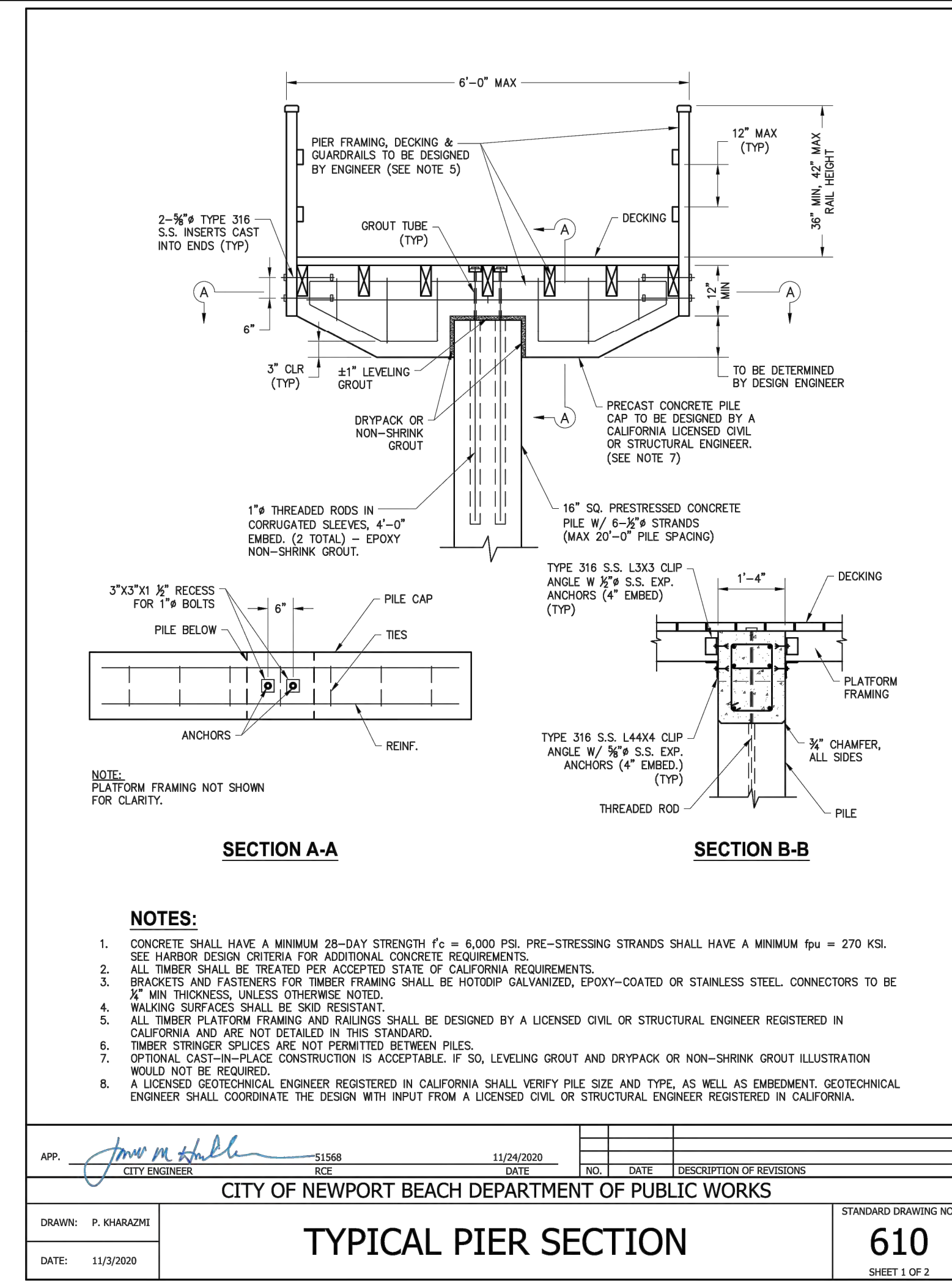
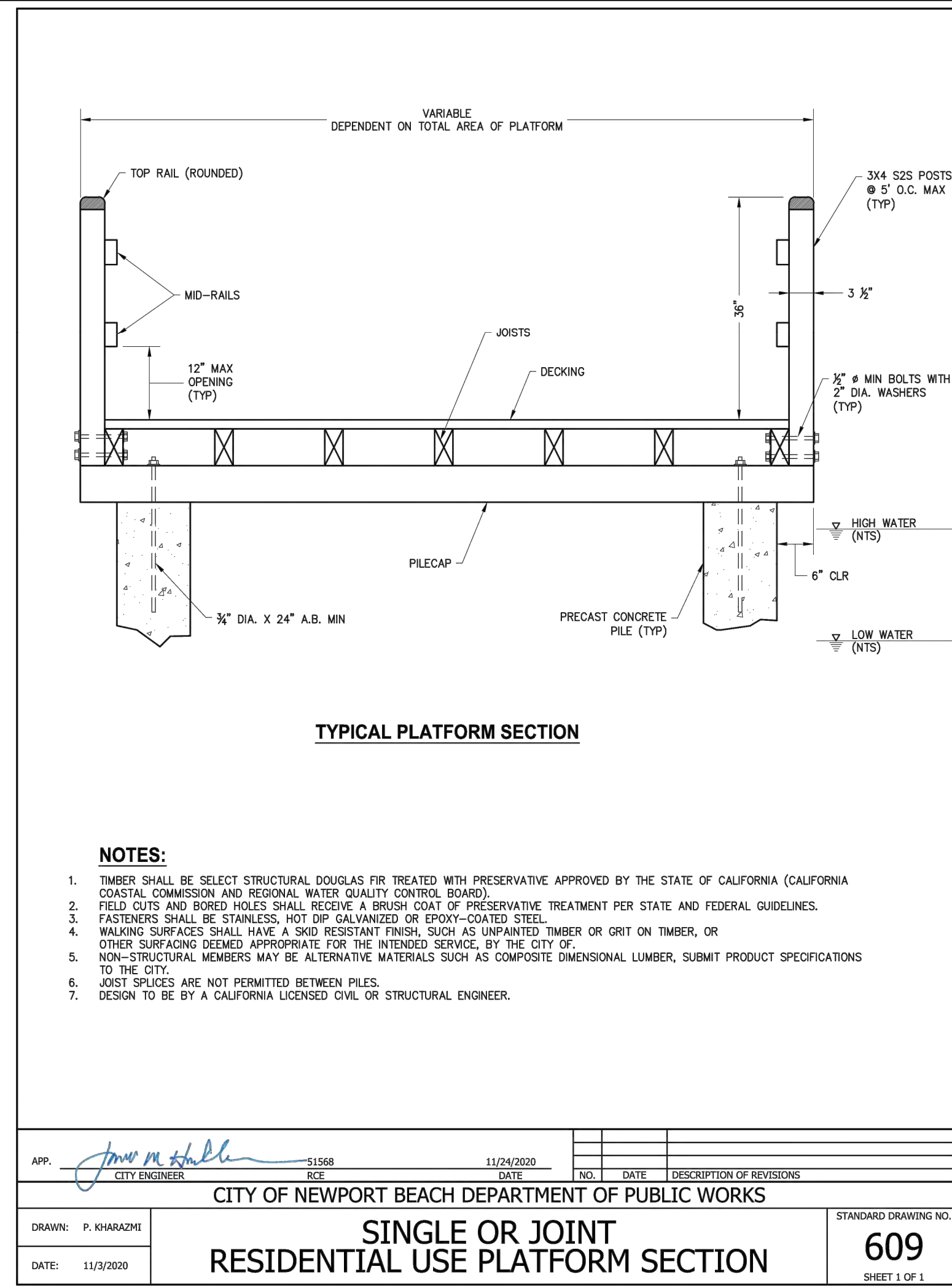
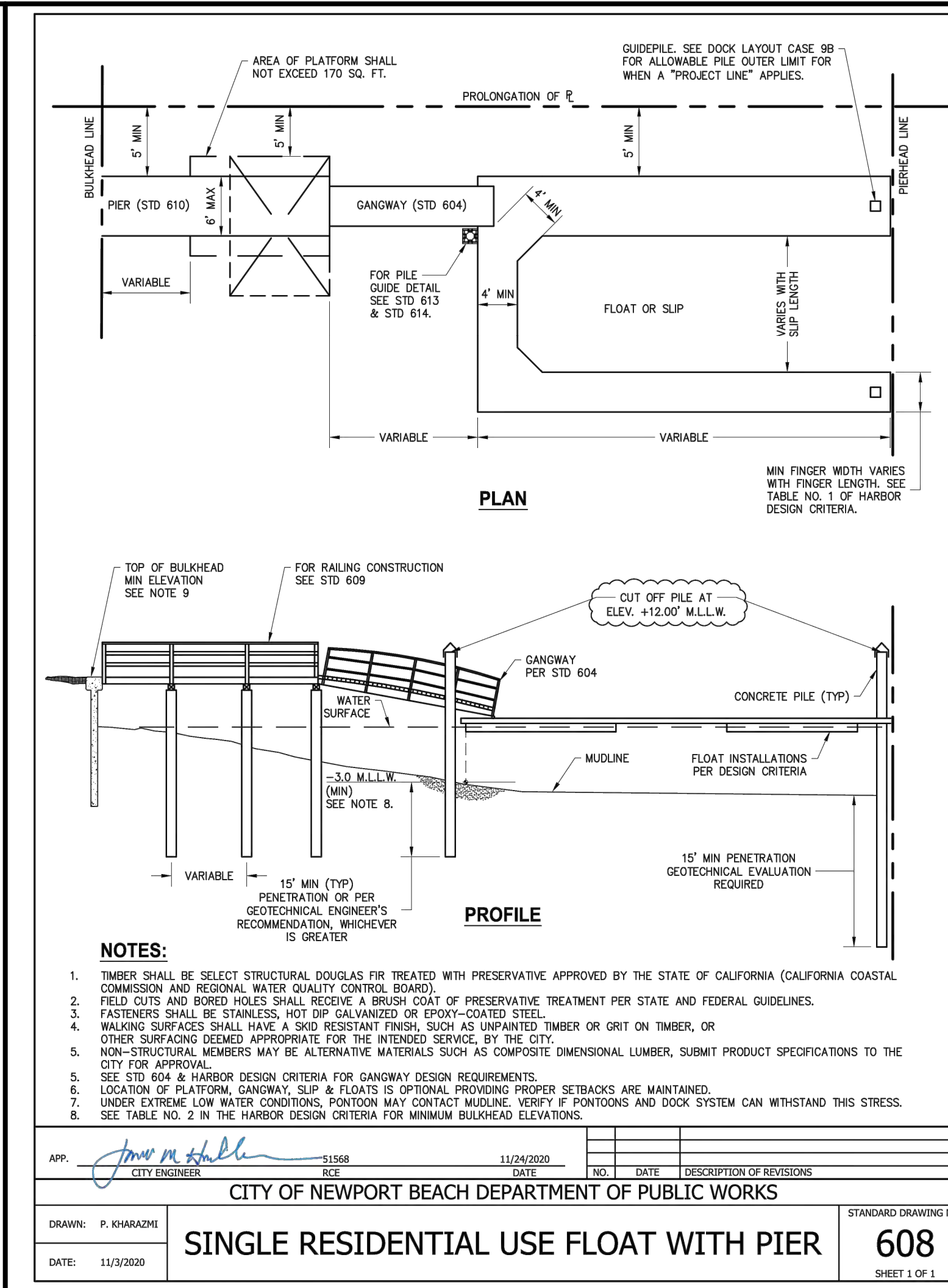
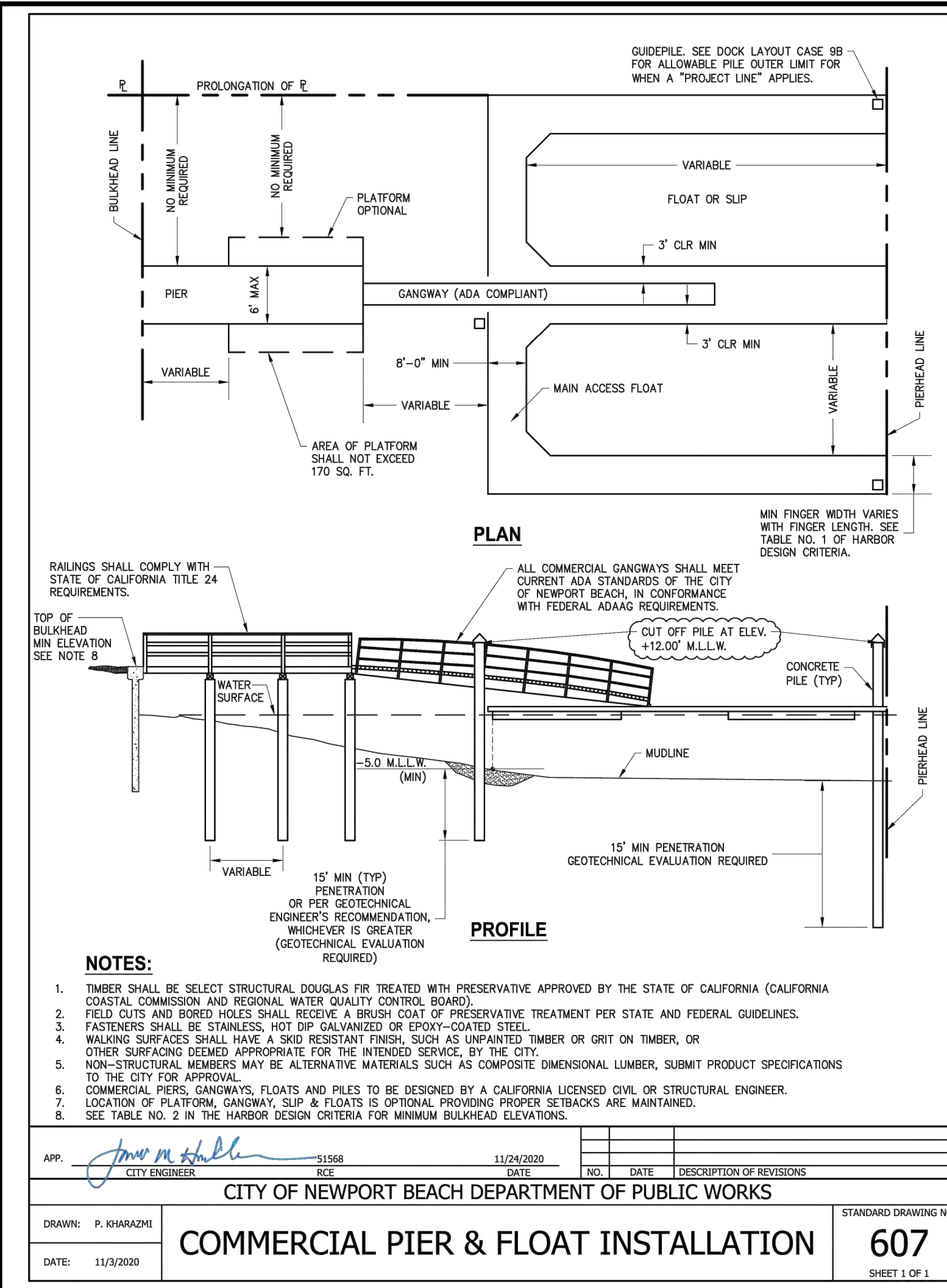
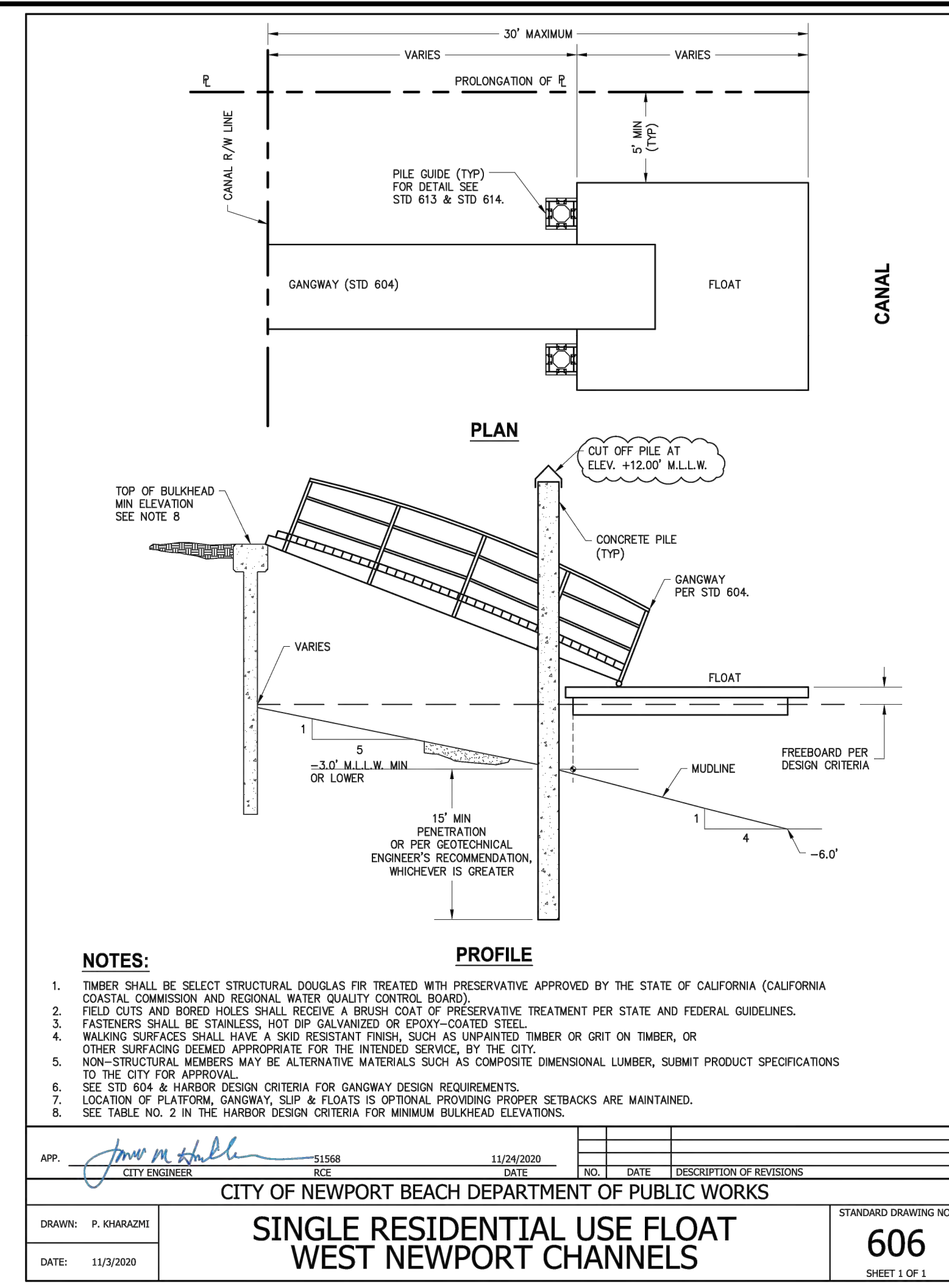
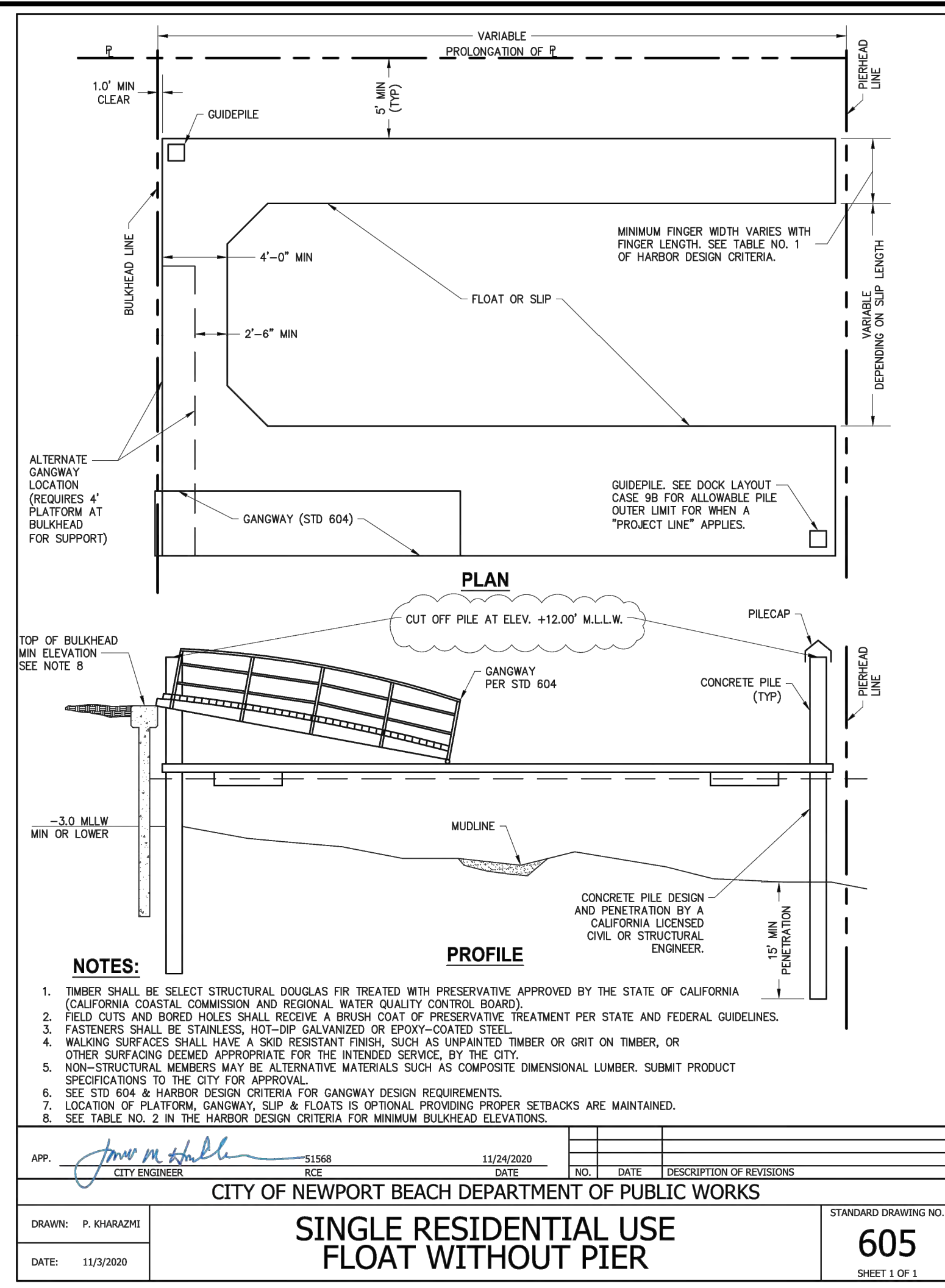
STANDARD DRAWINGS 600 TO 604

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PUBLIC WORKS DEPARTMENT

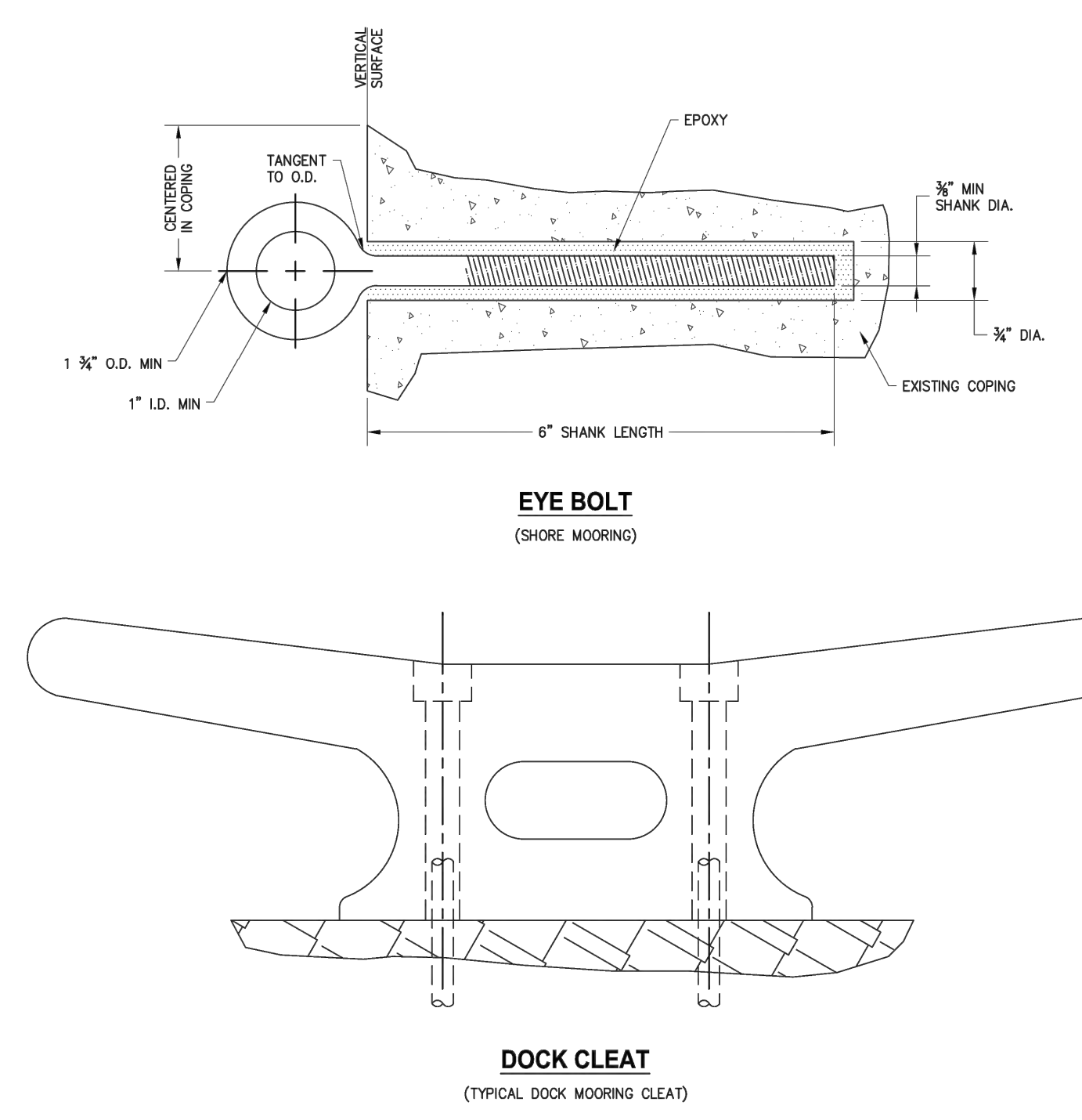
STANDARD DRAWINGS 605 TO 610

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AS SHOWN APRIL 27, 2021

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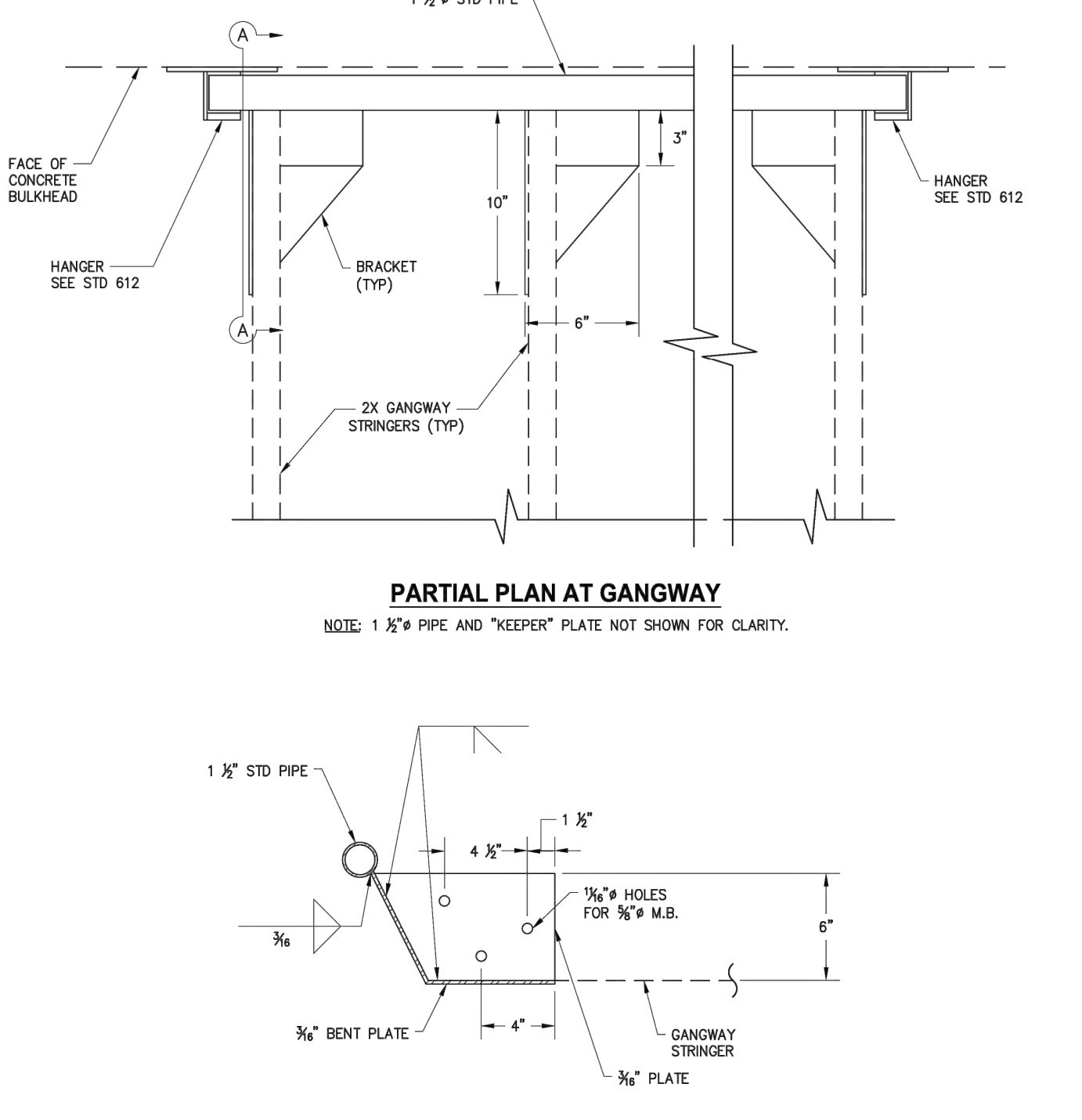
EYE BOLT
(SHORE MOORING)

DOCK CLEAT
(TYPICAL DOCK MOORING CLEAT)

NOTES:

- EYE BOLT SHALL BE FABRICATED OF STAINLESS STEEL.
- EPOXY SHALL CONFORM TO ASTM C881 STANDARD, OR SHALL BE AN EPOXY FORTIFIED GROUT INTENDED TO BE USED FOR PERMANENT ANCHORAGE OF EQUIPMENT, AND SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
- DOCK CLEATS SHALL BE CAST ALUMINUM OR GALVANIZED CAST METAL WITH HEX-HEAD THRU-BOLTS CONNECTED INTO THE TIMBER FRAMING WITH WASHER AND NUT, ALL GALVANIZED.
- DIAMETER OF THRU-BOLT PER CLEAT MANUFACTURER RECOMMENDATIONS.
- CLEAT AND BOLT SIZES BY DESIGN ENGINEER.

APP. <i>Jim M. Stahl</i>	NO. 1	DATE 11/24/2020	DESCRIPTION OF REVISIONS
CITY ENGINEER			
CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS			
DRAWN: P. KHARAZMI	EYE BOLT OR CLEAT FOR BOAT ANCHORAGE		STANDARD DRAWING NO. 611
DATE: 11/3/2020			SHEET 1 OF 1



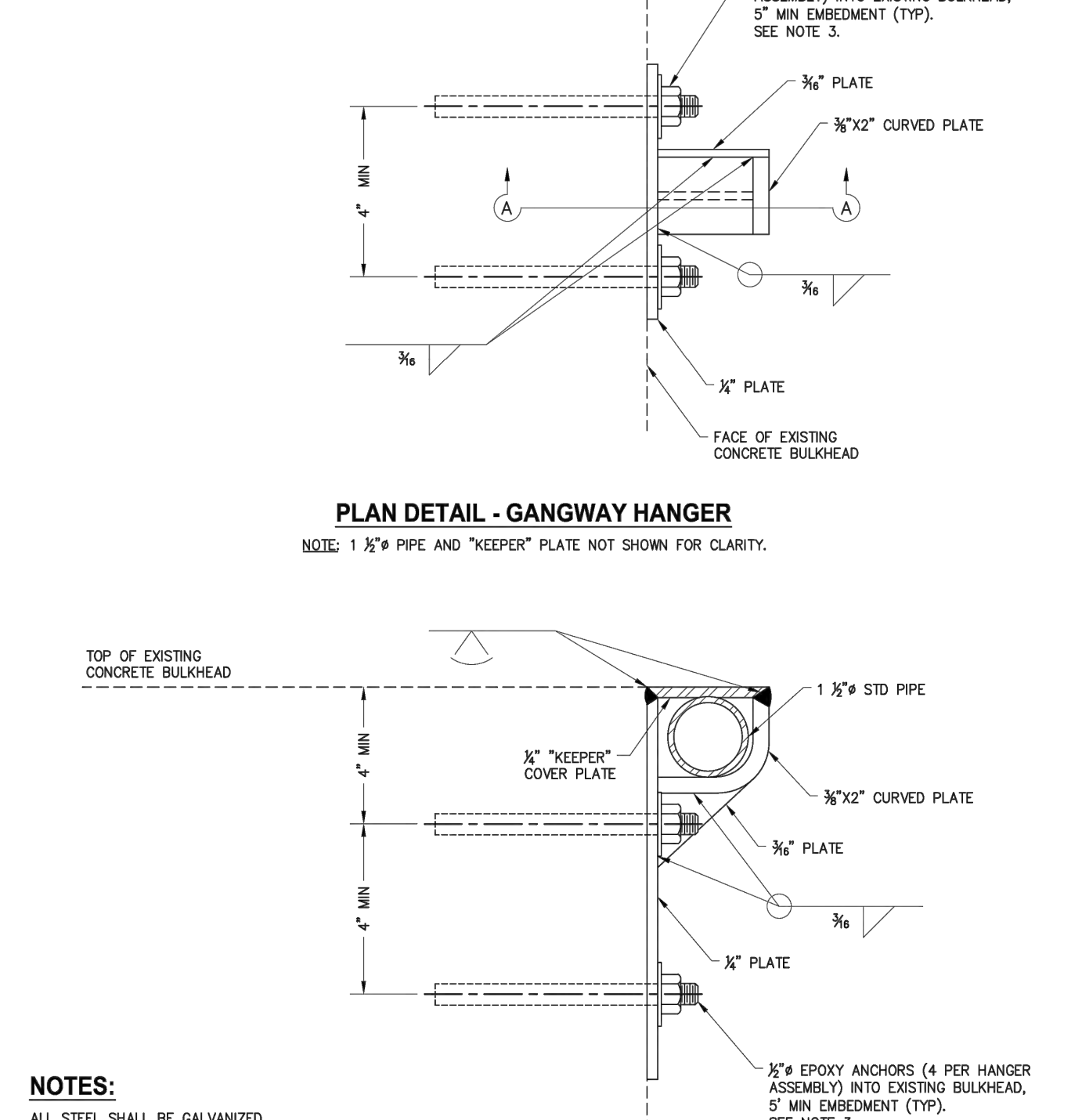
PARTIAL PLAN AT GANGWAY

DETAIL A - GANGWAY BRACKET

NOTES:

- ALL STEEL SHALL BE GALVANIZED.
- PROVIDE ONE BRACKET PER GANGWAY STRINGER.

APP. <i>Jim M. Stahl</i>	NO. 1	DATE 11/24/2020	DESCRIPTION OF REVISIONS
CITY ENGINEER			
CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS			
DRAWN: P. KHARAZMI	RESIDENTIAL GANGWAY BRACKET - TYPICAL (CONCEPT)		STANDARD DRAWING NO. 612
DATE: 11/3/2020			SHEET 1 OF 2



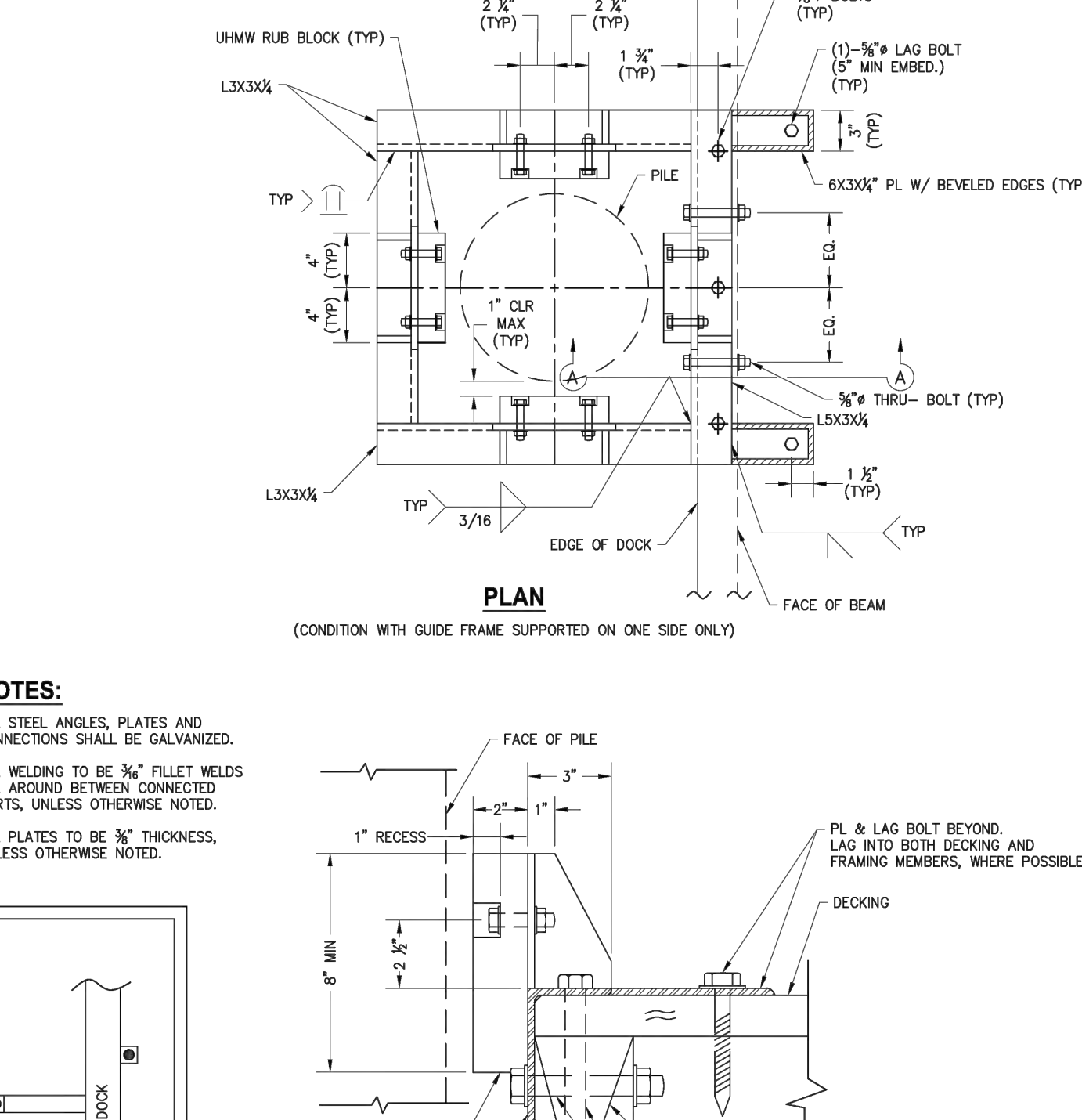
PLAN DETAIL - GANGWAY HANGER

DETAIL A - GANGWAY BRACKET

NOTES:

- ALL STEEL SHALL BE GALVANIZED.
- ONE HANGER SHOWN, TWO REQUIRED.
- FOR EXISTING BULKHEADS THAT ARE NOT CONCRETE, CONNECTION SHALL BE DETERMINED BY A LICENSED CIVIL OR STRUCTURAL ENGINEER REGISTERED IN CALIFORNIA.

APP. <i>Jim M. Stahl</i>	NO. 1	DATE 11/24/2020	DESCRIPTION OF REVISIONS
CITY ENGINEER			
CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS			
DRAWN: P. KHARAZMI	RESIDENTIAL GANGWAY HANGER - TYPICAL (CONCEPT)		STANDARD DRAWING NO. 612
DATE: 11/3/2020			SHEET 2 OF 2



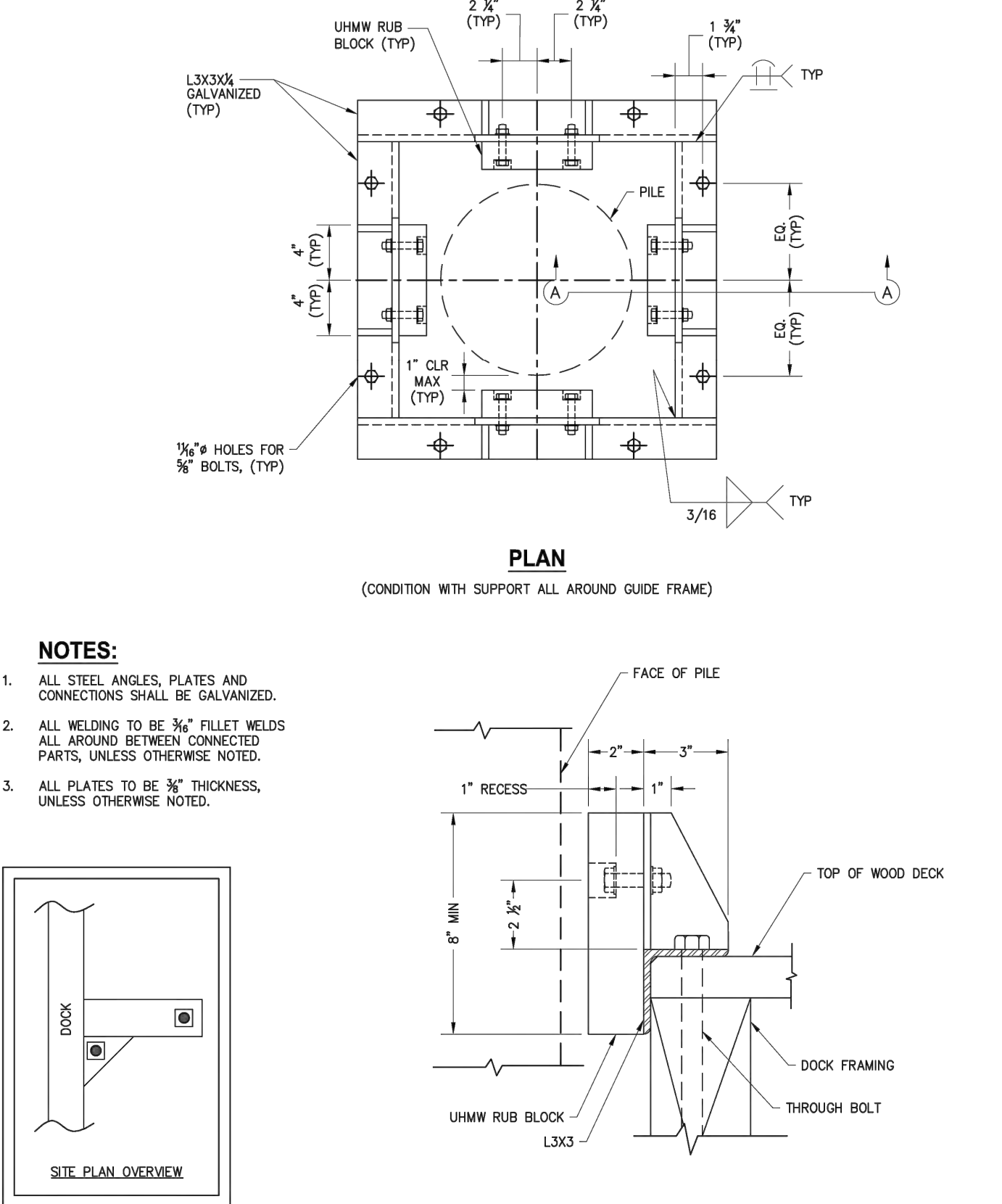
KEY PLAN

SECTION A-A

NOTES:

- ALL STEEL ANGLES, PLATES AND CONNECTIONS SHALL BE GALVANIZED.
- ALL WELDING TO BE 3/4" FILLET WELDS ALL AROUND BETWEEN CONNECTED PARTS, UNLESS OTHERWISE NOTED.
- ALL PLATES TO BE 3/8" THICKNESS, UNLESS OTHERWISE NOTED.

APP. <i>Jim M. Stahl</i>	NO. 1	DATE 11/24/2020	DESCRIPTION OF REVISIONS
CITY ENGINEER			
CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS			
DRAWN: P. KHARAZMI	PILE GUIDE RUB BLOCK TYPICAL DETAIL (CASE I)		STANDARD DRAWING NO. 613
DATE: 11/3/2020			SHEET 1 OF 1



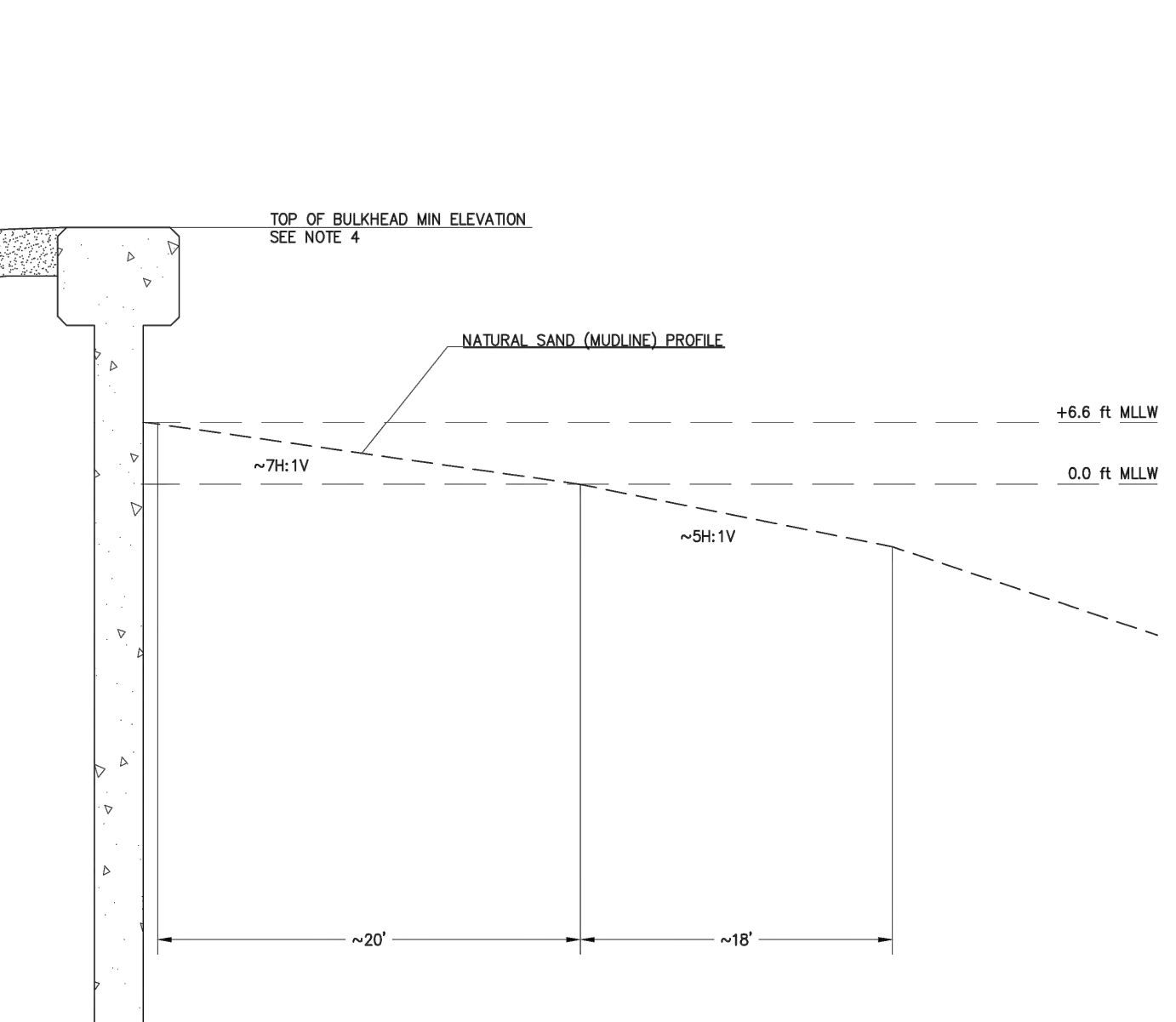
KEY PLAN

SECTION A-A

NOTES:

- ALL STEEL ANGLES, PLATES AND CONNECTIONS SHALL BE GALVANIZED.
- ALL WELDING TO BE 3/4" FILLET WELDS ALL AROUND BETWEEN CONNECTED PARTS, UNLESS OTHERWISE NOTED.
- ALL PLATES TO BE 3/8" THICKNESS, UNLESS OTHERWISE NOTED.

APP. <i>Jim M. Stahl</i>	NO. 1	DATE 11/24/2020	DESCRIPTION OF REVISIONS
CITY ENGINEER			
CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS			
DRAWN: P. KHARAZMI	PILE GUIDE RUB BLOCK TYPICAL DETAIL (CASE II)		STANDARD DRAWING NO. 614
DATE: 11/3/2020			SHEET 1 OF 1

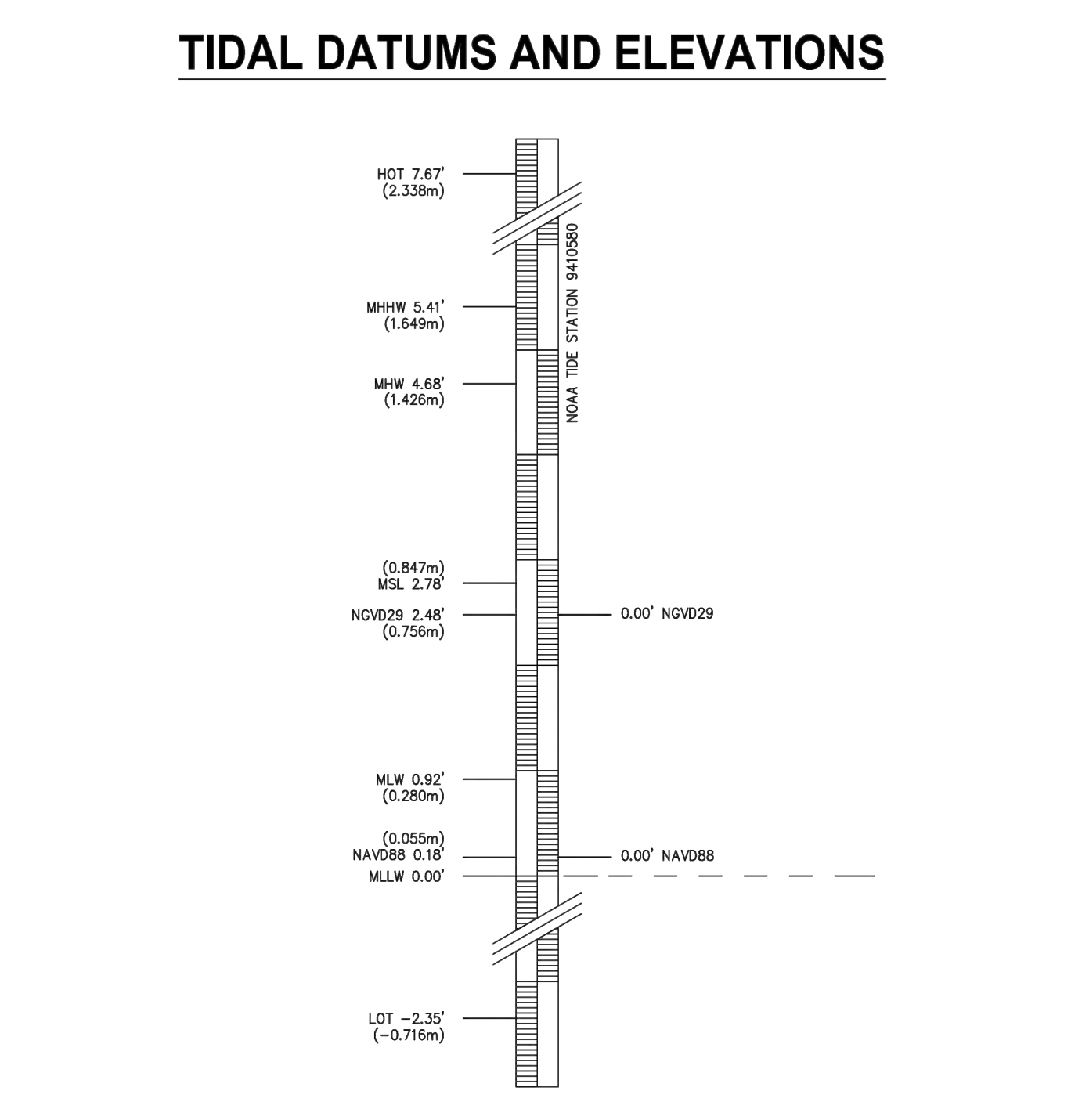


PROFILE

NOTES:

- NATURAL SAND PROFILES VARY BY LOCATION WITHIN THE HARBOR.
- H/V = HORIZONTAL TO VERTICAL
- MLW = MEAN LOWER LOW WATER
- SEE TABLE NO. 2 IN THE HARBOR DESIGN CRITERIA FOR MINIMUM BULKHEAD ELEVATIONS.

APP. <i>Jim M. Stahl</i>	NO. 1	DATE 11/24/2020	DESCRIPTION OF REVISIONS
CITY ENGINEER			
CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS			
DRAWN: P. KHARAZMI	NATURAL SAND PROFILES IN NEWPORT HARBOR		STANDARD DRAWING NO. 615
DATE: 11/3/2020			SHEET 1 OF 1



TIDAL DATUMS AND ELEVATIONS

ABBREVIATIONS:

- HOT = HIGHEST OBSERVED TIDE (1983.01.26)
- MHHW = MEAN HIGHER HIGH WATER
- MHW = MEAN HIGH WATER
- MSL = MEAN SEA LEVEL
- MLW = MEAN LOW WATER
- MLLW = MEAN LOWER LOW WATER
- LOT = LOWEST OBSERVED TIDE (1988.01.20)
- NAVD88 = NORTH AMERICAN VERTICAL DATUM 1988
- NOVD29 = NATIONAL GEODETIC VERTICAL DATUM 1929

TIDAL DATUM SEPARATIONS SHOWN FOR NOAA TIDE STATION 9410080, NEWPORT BAY ENTRANCE TIDAL EPOCH 1983 - 2001 (PUBLICATION DATE: 04/21/2003) <https://co-ops.nos.noaa.gov/gdums.html?tid=9410080>

APP. <i>Jim M. Stahl</i>	NO. 1	DATE 11/24/2020	DESCRIPTION OF REVISIONS
CITY ENGINEER			
CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS			
DRAWN: P. KHARAZMI	TIDE PLANES AND TIDAL DATUM RELATIONSHIPS		STANDARD DRAWING NO. 616
DATE: 11/3/2020			SHEET 1 OF 1

CITY OF NEWPORT BEACH
PUBLIC WORKS DEPARTMENT

STANDARD DRAWINGS 611 TO 616

DESIGNER: _____ PHONE #: _____ SIGNATURE: _____

PUBLIC WORKS APPROVAL _____ DWG. SCALE: _____ DATE: _____

AS SHOWN APRIL 27, 2021

DRAWING NO. _____ SHEET 9 OF 9