

# ORDINANCE 25086

## WATER FRONT STRUCTURES AND MARINA CODE

March 31, 1992

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# ORDINANCE 25086

## WATERFRONT AND MARINA CODE

March 31, 1992

AN ORDINANCE relating to the Building Code, and more particularly waterfront structures and marinas; amending Chapter 2.02 of the Official Code of the City of Tacoma by repealing Sections 2.02.810 through 2.02.930 thereof; establishing a new chapter, to be known and designated as Chapter 2.13, comprised of seven sections numbered 2.13.010 through 2.13.070; and amending Chapter 3.02 of the Official Code of the City of Tacoma by addition of two new sections, to be known and designated as Sections 3.02.103 and 3.02.106.

BE IT ORDAINED BY THE CITY OF TACOMA:

Section 1. That sections 2.02.810 through 2.02.930 of the Official Code of the City of Tacoma are hereby repealed in their entirety.

Section 2. That Title 2 of the Official Code of the City of Tacoma is hereby amended by the addition thereto of a new chapter, to be known and designated as Chapter 2.13, consisting of seven sections numbered 2.13.010 through 2.13.070, to read as follows:

### **2.13.010 TITLE.**

Chapter 2.13 of the Official Code of the City of Tacoma shall be known as the Waterfront Structure and Marina Code.

### **2.13.020 SCOPE.**

This chapter shall pertain to and regulate the fire protection and construction of waterfront structures and marinas, as defined herein, which shall be subject to all requirements of the codes and ordinances of the City of Tacoma relating to other structures, including but not limited to the Building Code, Mechanical Code, Fire Code, Plumbing Code, Electrical Code, Boiler and Pressure Vessel Code, Energy Code, Cross Connection Control Code, Land Use Regulatory Code, and Shoreline Management Act as officially adopted by the City of Tacoma, except as may be specifically limited, modified, or amended herein.

EXCEPTION: This Chapter shall not apply to existing waterfront structures classified as Group R, Division 3 occupancies, as defined in the Building Code.

### **2.13.030 EXISTING INSTALLATIONS.**

Except as specifically provided within this chapter, facilities regulated by this chapter, and in existence at the time of the adoption of this chapter may have their existing use or occupancy continued, subject to the provisions of the building and fire codes, if such occupancy was an approved use at the time of the adoption of this chapter.

**2.13.040 DEFINITIONS.**

The following terms used in the succeeding sections of this chapter relating to waterfront structures and marinas shall have the meanings herein indicated. Where specific terms are not defined within this section, their meaning shall be as defined using chapter 4 of the Uniform Building Code as adopted and amended by Chapter 2.02 of the Official Code of the City of Tacoma, or Article 9 of the Uniform Fire Code as adopted and amended by Chapter 3.02 of the Official Code of the City of Tacoma.

**a. A Definitions:**

APPROACH WAY: A structure used to gain access to a pier or wharf, but not used to moor vessels.

**b. B Definitions:**

BEAM: Maximum overall width of a vessel.

BERTH: A place where a vessel(say be secured to a fixed or floating structure and left unattended.

BOAT HOUSE: A boat house shall be a specific type of vessel designed to be moored to a main float system to enclose and protect another vessel or vessels from the elements. The construction of boat houses shall be regulated by this ordinance and the building and fire codes.

BUILDING CODE: The Uniform Building Code as adopted and amended by Chapter 2.02 of the Official Code of the City of Tacoma.

BUILDING OFFICIAL: City of Tacoma Public Works Department, Building and Land Use Services Division Manager.

**c. C Definitions:**

CORROSION RESISTANT STEEL: For the purposes of this ordinance, unless specifically stated otherwise, corrosion resistant steel shall mean steel which is galvanized, painted or otherwise coated to retard corrosion, or any uncoated steel alloy which is defined by The American Society for Testing and Materials (ASTM) specifications as corrosion resistant.

CROSS CONNECTION CONTROL CODE: The State of Washington regulations for cross connection control as interpreted and enforced by the City of Tacoma Department of Public Utilities, Water Division.

**d. D Definitions:**

**DECK:** That element of a waterfront structure which provides the lowest floor level or platform for use, under which occur only the structural support system for the structure, and no usable space.

**DRY BOAT STORAGE:** A building, which is either open or subdivided into stalls and is used primarily for the dry storage of vessels.

**e. E Definitions:**

**f. F Definitions:**

**FIRE CHIEF:** Chief of the City of Tacoma Fire Department.

**FIRE CODE:** The Uniform Fire Code as adopted and amended by Chapter 3.02 of the Official Code of the City of Tacoma.

**FLOAT:** A floating structure normally used as a point of transfer for passengers and/or goods, and/or for berthing purposes.

1. **Finger Float:** A narrow float connected to a main float, which defines the length of a berth and separates that berth from adjacent berths.

2. **Float System:** A combinations of a main float and finger floats, either open or covered, designed to be used to moor vessels.

3. **Main Float:** A float connected by a gangway to the shore or to a waterfront structure, being restrained laterally by an anchorage system, normally of piles, but free to move vertically, and which provides access to berths. Finger floats may be attached to one or both sides of main floats .

**g. G Definitions:**

**GANGWAY:** A bridge affording access from shore, or a waterfront structure to a main float.

**h. H Definitions:**

**i. I Definitions:**

**j. J Definitions:**

**k. K Definitions:**

**l. L Definitions:**

**LENGTH, VESSELS:** For the purposes of this code vessel length shall be the overall length of the vessel including , but not limited to, bowsprits, overhangs, swimming platforms and dinghies.

**LIMIT LINE FOR OBSTRUCTIONS:** Is the imaginary vertical plane along a water access aisle, which is the limit beyond which obstructions are not permitted to encroach into the water access aisle.

**m. M Definitions:**

**MARINA:** A development on or along navigable water to provide berths, storage and/or service for vessels, consisting of float systems used for the mooring and floating storage of vessels, and support and service facilities. Storage of vessels are normally within designated berths which may be either covered or open. Dry Boat Storage may also be provided at the site of marina.

**MEAN HIGHER HIGH WATER:** 5.52 feet above Mean Sea Level.

**MEAN LOWER LOW WATER:** 6.32 feet below Mean Sea Level.

**MEAN SEA LEVEL:** Mean sea level is the zero point for the datum established by the National Oceanic and Atmospheric Administration (NOAA). NOAA datum and the City of Tacoma Public Works Datum as of July 1, 1990 are approximately interchangeable. (Mean Sea level was equal to approximately +14.01 feet according to the old City of Tacoma Public Works Datum. (Datum published prior to July 1, 1990.))

**MOOR:** The act of securing a vessel into a berth at a pier, wharf, or float system.

**n. N Definitions:**

**NOMINAL SIZE (Lumber):** The commercial size designation of width and depth, in standard sawn lumber and glue-laminated lumber grades; somewhat larger than the standard net size of dressed lumber, in accordance with U.B.C. Standard No. 25-1 for sawn lumber and U.B.C. Standard No. 25-10 for structural glued laminated timber.

**o. O Definitions:**

**p. P Definitions:**

**PIER:** A fixed waterfront structure, usually of greater length than width, of timber, stone, concrete, steel, or other material, having a deck and projecting from the shore over waters subject to the Shoreline Management Act so that vessels may be moored alongside for loading and unloading or for storage or repairs. For the purpose of this code, where the word "pier" is used it shall be construed as including "wharf".

PSF: Pounds per square-foot

**q. Q Definitions:**

**r. R Definitions:**

**s. S Definitions:**

SUBSTRUCTURE: That portion of a waterfront structure below and including the deck.

1. COMBUSTIBLE SUBSTRUCTURES. A substructure which does not qualify as either a fire resistive substructure or a noncombustible substructure.

2. FIRE RESISTIVE SUBSTRUCTURES. A noncombustible substructure with all elements having a four hour fire-resistive rating, except that wood piles or wood cribwork or steel piles, which are not fire rated, may be used if they do not extend above Mean Lower Low Water.

3. NONCOMBUSTIBLE SUBSTRUCTURES. A noncombustible substructure with only the deck having a four hour fire-resistive rating, except that wood piles or wood cribwork may be used if they do not extend above Mean Lower Low Water.

SUPERSTRUCTURE: That portion of a waterfront structure constructed above the deck.

**t. T Definitions:**

**u. U Definitions:**

U.B.C. Uniform Building Code. See Definition of Building Code.

U.B.C. STANDARDS: Uniform Building Code Standards promulgated by the International Conference of Building Officials, as adopted and amended by Chapter 2.02 of the Official Code of the City of Tacoma.

U.F.C. Uniform Fire Code. See Definition of Fire Code.

U.F.C. STANDARDS: Uniform Fire Code Standards jointly promulgated by the Western Fire Chiefs Association and the International Conference of Building Officials, as adopted and amended by Chapter 3.02 of the Official Code of the City of Tacoma.

**v. V Definitions:**

VESSEL: Is an all inclusive term to describe a craft which travels on the water, and includes but is not limited to pleasure boats, commercial shipping, fishing boats, house boats, boat houses and barges, but does not include floats or other water borne structures normally anchored in place and stationary.

See the definition of Boat House.

**w. W Definitions:**

WATERFRONT STRUCTURE: A structure or improvement which at any time is over water subject to the Shoreline Management Act, and is constructed with a deck supported on piles or other types of open structural framing, where the under-deck area facing the water remains unenclosed except for fender systems.

WHARF: A waterfront structure of timber, stone, concrete, steel, or other material, having a deck built over, along and parallel to waters subject to the Shoreline Management Act so that vessels may be moored alongside for loading and unloading, or for storage or repairs. For the purpose of this code, where the word "wharf" is used it shall be construed as including "pier".

**x. X Definitions:**

**y. Y Definitions:**

**z. Z Definitions:**

**2.13.050 WATERFRONT STRUCTURES**

**a. GENERAL.**

All piers, wharves and waterfront structures as herein defined shall comply and conform to all of the requirements set forth herein.

**b. PROTECTION AGAINST MECHANICAL DAMAGE.**

Waterfront structures shall be designed for impact loads from vessels and floating debris.

Regardless of the type of construction of the substructure, fender systems may be built of wood members with a minimum nominal dimension of four inches and a minimum nominal area of forty-eight square inches, provided the outside face of said fender system is located no more than three feet inside the outermost edge of the deck.

**c. COMBUSTIBLE SUBSTRUCTURES.**

**1. PILES AND STIFFENING MEMBERS.**

The piling and cross bracing of those portions of the substructure which are over water at any time shall be so designed to allow the passage of a six-foot wide boat for access to all points.

**2. PIER DECKS AND SUPPORTS**

A. Pile caps shall consist of sawed or glue-laminated timber not less than eight-inch nominal minimum dimension and ninety-six square inches nominal cross-sectional area, and other members shall be not less than six-inch nominal minimum dimension and seventy-two square inches nominal cross-sectional area. Deck planking on stringers shall be not less than four inches in nominal thickness, and on this shall be laid a wearing surface of two-inch nominal wood sheathing, or a layer of concrete or asphalt, or other material of equivalent durability. The sheathing and deck planks shall be laid at right angles, except that in the driveways the sheathing may be laid diagonally.

B. Pier decks without superstructures may have decks of wood decking or planking of not less than three inches nominal thickness.

C. Pier decks of composite laminated wood and concrete construction shall be acceptable, provided that the wood decking or planking used shall be not less than two inches in nominal thickness and shall be treated in accordance with the Building Code.

D. Piers and walkways which are ten feet or less in width may be constructed with caps and girders which have a minimum nominal width and depth of six-inches. Beams and other members shall have a minimum nominal width of three inches. Wood decking or planking may have a nominal thickness of two inches; and bracing may have a minimum nominal dimension of two inches.

**3. AUTOMATIC FIRE SPRINKLING OF COMBUSTIBLE SUBSTRUCTURES.**

A. GENERAL. All combustible substructures shall be provided with a complete system of automatic fire sprinklers in the under-deck areas.

B. STANDARDS. Installation of sprinkler equipment shall be in accordance with the Building Code and the Cross Connection Control Code. In those parts of waterfront structures where automatic fire sprinkler systems are subject to damage by floating debris, such as beneath depressed sections of pier decks, deviations from the strict application of the standards will be permitted and alternative methods of protection may be required. Where damage to sprinkler equipment by floating objects may occur, adequate provision shall be made to prevent such damage.

C. **ADDITIONAL PROVISIONS** In addition to the standards referred to in in subsection B hereof, the following provisions shall apply:

i. Sprinkler systems used in under-deck areas shall be protected from corrosion in accordance with NFPA Pamphlet 307.

ii. Water supply mains on substructures without superstructures shall be installed in under-deck space. If it is inadvisable to install mains in the under-deck space, they may be installed in the superstructure or on the deck of the substructure, with approval from the Building Official.

iii. Automatic fire sprinkler systems and supply piping subject to freezing shall be installed as dry pipe systems.

iv. Automatic fire sprinkler systems installed in waterfront structures shall be maintained in operable working condition and shall be tested and recertified annually.

#### **4. SUBDIVISION OF COMBUSTIBLE SUBSTRUCTURES.**

All substructures of combustible construction shall have the under-deck area subdivided as follows:

A. **AREA SEPARATION WALLS.** Area separation walls shall be required in combustible substructures at intervals not to exceed 450 feet in each direction. Area separation walls shall also be provided at each location an area separation wall occurs in a superstructure located on the substructure and shall constitute a continuation of the area separation walls in the superstructure. Substructure area separation walls shall be of reinforced concrete having a fire resistance of at least four hours, except that fire walls made of other approved noncombustible materials may be used, provided they are equivalent in stability and have an equivalent fire resistance. Walls shall be free of holes and shall extend from the deck down to Mean Lower Low Water. Where aprons or platforms are built along the sides of the waterfront structure, area separation walls shall extend to the outside edges of such aprons or platforms.

B. **FIRE STOPS.** Spacing between area separation walls and fire stops or between fire stops shall not exceed 150 feet. Fire stops shall fit tightly up against the deck and around any structural members or pipes that pass through the fire stop so that an effective barrier to fire and draft will be maintained. Fire stops shall be constructed of wood planking built up to a thickness of six inches and securely fastened to the supporting structure, or they may be of other construction approved by the Building Official. Fire stops shall extend from the deck down to Mean Lower Low Water. Where aprons or platforms are built along the sides of the waterfront structure, fire stops shall extend to the outside edges of such aprons or platforms.

#### **d. FIRE FLOW REQUIRED.**

A water supply shall be provided on or immediately adjacent to all waterfront structures for the purpose of fire fighting. The water system shall be sufficient to deliver the quantity determined from Appendix III-A of the Uniform Fire Code. Fire flow shall be designed for not less than four hours duration. Pipes, pumps, and other facilities shall be designed to deliver the required rate of flow. Hydrants or hose outlets shall be of sufficient number and adequately spaced to enable the application of the required fire flow of water to the waterfront structure without exceeding three hundred feet of hose line.

**e. WATER SUPPLY AND DESIGN OF SYSTEM.**

Water may be supplied from the municipal water system or any other water supply meeting the approval of the Building Official. The minimum residual water pressure shall be 20 psi at all fire hydrant connections. Private water systems shall be designed and installed in accordance with the applicable requirements of N.F.P.A. Standard No. 24.

**f. SUPERSTRUCTURES.**

**1. GENERAL.**

Superstructures shall comply with all the provisions of the Building Code. Superstructures which are required by the provisions of the Building Code to be either type I-FR or type II-FR construction shall be constructed on fire-resistive substructures.

**2. AUTOMATIC FIRE SPRINKLER SYSTEMS.**

All superstructures shall be provided with an automatic fire sprinkler system complying with the provisions of the Building Code and the Cross Connection Control Code. Area and height limits for superstructures may be increased as permitted by the Building Code for automatic fire sprinkler systems.

EXCEPTION: Automatic fire sprinkler systems need not be installed in superstructures constructed on noncombustible substructures as defined herein, provided that all of the following conditions are met:

i. The aggregate area of all superstructures on the substructure does not exceed 1500 square feet, and

ii. The aggregate occupant load of the superstructures, as calculated in accordance with the provisions of the Building Code, does not exceed fifteen, and

iii. The occupancy classification of the superstructures on the substructure is Group B, Division 2 or Group B, Division 4 occupancies as defined in the Building Code.

**2.13.060 DRY BOAT STORAGE**

**a. GENERAL.**

Dry boat storage shall meet all requirements of the Building Code for a Group B, Division 1 Occupancy, and the requirements set forth within this section.

**b. AREA.**

Dry boat storage shall be limited in area as set forth in the Building Code for Group B, Division 1 Occupancies, including allowing increases for yards, and automatic fire sprinkler systems, except as modified within this section:

**1. OPEN AREAS:**

Dry boat storage containing undivided boat storage areas in excess of 5000 square-feet shall be provided with an automatic fire sprinkler system throughout. Boat storage areas within a dry boat storage may be divided into areas of less than 5000 square-feet by walls constructed as one-hour occupancy separation walls, as defined in the Building Code. For the purposes of this section, undivided shall include spaces which are partitioned by dividers constructed of metal wire cloth screening materials which have an open to solid ratio of two (2) or more supported on noncombustible framework. (The area of the wire meshing is 33 percent or less of the total area of the metal wire cloth.) The projected area of framework shall not exceed ten percent (10%) of the area of the dividers.

**2. DRY BOAT STORAGE DIVIDED INTO LOCKERS:**

Where dry storage buildings are divided into lockers by solid walls or by other materials not complying with wire cloth requirements of item 1 above, the building shall be provided with an automatic fire sprinkler system throughout.

EXCEPTION: Where access to the boat lockers is exclusively and directly to each locker from the exterior of the building and the division walls between lockers are constructed as one-hour occupancy separation walls as defined in the Building Code, the sprinkler system may be omitted unless required by other provisions of the Building Code.

Division walls constructed as one-hour occupancy separations, as defined in the Building Code, shall be provided in buildings divided into boat lockers to divide the building into sub-areas not to exceed 8000 square-feet or 32 boat lockers whichever ever is the smaller area.

**c. CONSTRUCTION TYPE:**

Dry boat storage may be constructed of any type of construction permitted by the Building Code for a Group B, Division 1 Occupancy, except an automatic fire sprinkler system shall not be substituted for one-hour fire resistive construction.

In non-rated types of construction, floors in multistory dry boat storage buildings shall be of one-hour fire-resistive construction, or heavy timber construction as defined in the Building Code.

**d. HEIGHT:**

Dry boat storage shall be limited in height in accordance with the provisions of the Building Code. Dry boat storage shall be limited to one-story unless the building is provided with an automatic fire sprinkler system throughout. Increases in the number of stories permitted by the Building Code for the installation of an automatic fire sprinkler system shall not be permitted in dry boat storage buildings.

**e. AUTOMATIC FIRE SPRINKLER SYSTEMS:**

Automatic fire sprinkler systems shall be provided throughout when required by the Building Code and/or by this code.

**f. RACK STORAGE OF BOATS:**

**1. EXTERIOR ACCESS RACK STORAGE:**

Rack storage where the access is entirely from the exterior shall meet the following conditions:

A. Rack boat storage structures shall be entirely of noncombustible construction conforming to the requirements for a group B, division 1 occupancy and for type II-N construction as defined in the Building Code.

B. Exterior access rack boat storage structures shall be entirely open on the access sides of the rack. End walls in the building may be covered with sheet metal for weather protection. Interior longitudinal walls shall not be permitted. Interior noncombustible transverse walls which are two-hour fire resistive area separation walls shall be permitted for the purposes of dividing the rack boat storage into two or more structures for purposes of area limitation. No other transverse walls shall be permitted. Except for the first level of the rack storage, there shall be no floors and no permanent catwalks.

C. Boat rack structures shall be limited to the area permitted for a one story, group B, division 1 occupancy of type II-N construction as defined by the Building Code. Area increases as permitted by the building code for yards and for the installation of an automatic fire sprinkler system shall be permitted

D. Rack boat storage shall be limited to one story with a maximum of three levels of boat storage. No increase in the number of stories shall be permitted by the installation of an automatic fire sprinkler system. The number of boat storage levels may be increased to a total of four (4) by installation of a fire sprinkler system at all levels of boat storage.

**2. INTERIOR RACK BOAT STORAGE:**

Rack boat storage within enclosed buildings shall meet the requirements for boat storage as set forth in subsections (a) through (e) of this section. Rack storage shall be limited to a maximum of two levels per story within a building, except three (3) levels of boat storage will be permitted per story when the entire building is sprinkled, and the sprinkler system includes all levels of the rack boat storage. Rack structures within buildings shall be of open noncombustible construction, with no floor space or permanent catwalks above the floor of the story in which the rack is located.

**3. AUTOMATIC FIRE SPRINKLER SYSTEMS:**

Automatic fire sprinkler systems when provided in rack storage shall be installed in accordance with the Building Code and N.F.P.A Pamphlet 13. Heat collectors shall be installed at each sprinkler head not located under a solid floor or roof.

**2.13.070 MARINAS**

**a. GENERAL:**

Marinas, because of their character, present unique problems in providing access for fire-fighting purposes, for providing water supply, and for providing exiting. In order to mitigate these problems all Marinas shall conform to the provisions of this section and the Fire Code.

**b. FLOAT SYSTEM LAYOUT.**

**1. WATER ACCESS AISLES:**

A. Where vessels are moored to a main float system on either side of the maneuvering aisle such that the berths are not parallel to the maneuvering aisle, the clear distance between the limit lines for obstructions, measured perpendicular to the maneuvering aisle, shall be a minimum of 1.25 times the length of the longest vessel served but not less than forty (40) feet.

Vessels in berths between finger floats may extend a maximum of five (5) feet beyond the ends of the finger floats into the access aisle, thereby establishing the limit line for obstructions. The extension into the access aisle shall be measured to the furthest extension of the vessel which shall include but not be limited to bowsprits, overhangs, swimming platforms and dinghies.

Where vessels are housed in boat houses, the boat houses may extend to the the limit line for obstructions. The maneuvering aisle shall be established by assuming a center line between or along the rows of boat houses. The limit lines for obstructions shall be established at points on both sides of the assumed center line of not less than five-eighths (5/8) of the longest boat house along the aisle, but not less than twenty feet. The centerline shall be relatively straight down the aisle length, with no changes of direction by less than a 40 foot radius, except at the ends of aisles where additional maneuvering room is provided. Where vessels are housed in boat houses, and the water access aisles exceed 300 feet in length the limit lines for obstructions shall be not less than 40 feet on each side of the assumed center line for the entire length of the aisle.

**EXCEPTION:**

Where water access aisles exceed 300 feet, the Fire Chief may allow narrower water access aisles where site conditions require or permit narrower water access aisles, and alternate fireboat access is possible.

B. Where vessels are moored parallel to and on one side of a water access aisle, the water access aisle widths shall be not less than forty (40) feet, plus 1.25 times the beam of the largest vessel expected to be moored at the facility. If vessels are moored parallel to and on both sides of an access aisle, the access aisle shall be not less than forty (40) feet, plus 2.5 times the beam of the largest vessel expected to be moored at the facility.

C. Water access routes and entries for vessels to a marina facility, shall be not less than forty (40) feet in width.

**2. FIRE FIGHTING MOORAGE POINTS:**

Structurally designed moorage point systems shall be provided along water access aisles at or near the ends of the Fire Department Access Passages on both sides of the aisle, to provide mooring points for the fire boat for fire-fighting and rescue purposes. Mooring points shall be capable of withstanding a lateral load in any direction of 2,500 pounds. Fire fighting moorage points are not required on a side of a water access aisle where boats are moored parallel to the aisle.

### **3. FIRE DEPARTMENT ACCESS PASSAGES:**

Access passages along uncovered finger floats, through covered boat storage sheds or between boat houses shall be provided between the water access aisles and the main floats, at intervals not to exceed two-hundred (200) feet. When vessels are moored on both sides of main floats the access passages shall be staggered by one-hundred (100) feet from one side to the other. Access Passages shall extend to the limit line for obstructions.

Fire Department access passages shall have a minimum unobstructed width of forty-eight (48) inches. Toe rails or curbs a minimum of five (5) inches in height shall be provided along both sides of access passages. The clear distance between the toe rails shall be not less than forty-one (41) inches.

### **4. MAIN FLOAT LENGTH:**

No portion of a main float shall exceed one-thousand (1000) feet in distance from the bottom of a gangway providing access to the shore or to a waterfront structure. The position of the bottom of the gangway shall be measured at Mean Higher High Water (+5.52 Feet NOAA Datum).

For fuel dispensers on a float system see the Fire Code provisions for marine service stations.

### **5. MAIN FLOAT WIDTHS:**

Main floats shall provide an unobstructed pathway with minimum dimensions of forty-four (44) inches in width by seven (7) feet in height, which shall be maintained the length of the main float at all times.

### **6. FINGER FLOAT WIDTHS:**

Finger floats shall be not less than thirty-six (36) inches in width.

### **7. GANGWAY WIDTH:**

Gangways shall have a minimum clear width of forty-four (44) inches. Handrails may extend a maximum of 3.5 inches into the required width on each side.

### **8. GANGWAY SLOPE:**

Gangways which are ramps shall not slope more than one (1) vertical to two and one-half (2.5) horizontal when tide is at Mean Lower Low Water (-6.32 Feet NOAA Datum). Cleats and a nonslip surface shall be provided on ramp gangways. Gangways constructed with self-leveling stairs shall provide treads runs of not less than eleven (11) inches nor more than eighteen (18) inches, and risers of not less than four (4) inches nor more than seven (7) inches. An approved nonslip surface shall be applied to all stair treads.

### **9. GANGWAY HANDRAILS AND GUARDRAILS:**

Guardrails shall be provided on both sides of gangways. Guardrails shall be a minimum of forty-two (42) inches in height measured perpendicular to the slope of the gangway surface. Guardrails shall be provided with intermediate bars or a pattern spaced to prevent a sphere four (4) inches in diameter from passing through. Handrails shall be provided on both sides of the gangway and shall be placed thirty-four (34) inches measured perpendicular to the slope of the gangway surface. The grip portion of the handrail shall be of a graspable shape not less than one and one-half (1.5) inches nor more than two (2) inches in diameter, and there shall be a space of one and one-half (1.5) inches between the backside of the handrail and the guardrail.

**c. COVERED MOORAGE SIZE AND SPACING LIMITATIONS**

Covered moorage shall be considered to be of two types, enclosed and open. Enclosed covered moorage shall be boat covers which are enclosed on three or more sides. Open covered moorage shall be boat shelters which are open on two or more sides. The area of covered moorages shall be subject to the limitations set forth in the following table:

ALLOWABLE AREAS FOR COVERED MOORAGES (2),(3),(4),(5)

Building Code Type of Construction	Allowable Single Boat House Area(1)	Allowable Area for Boat Covers and Area of Combined Boat Houses (6)
V-N	3000 sq-ft	8000 sq-ft
II-N	3000 sq-ft	12000 sq-ft

Footnotes:

(1) Sidewalls for all new boat houses, for all new enclosed boat covers and all boat houses relocated from other locations outside the marina in question, shall be sheathed with corrosion resistant steel. Aluminum, wood and plastic siding materials shall be prohibited.

(2) Provide continuous ridge smoke venting for all new structures and for all structures relocated from other locations outside of the marina in question. Smoke ridge ventilation shall be a minimum of one percent of the roof area. Fixed plastic panels may be used for up to fifty percent of the required smoke vent area in enclosed boat moorages.

(3) Clearances for calculated area increases shall be in accordance with the building code.

(4) Unroofed areas to separate adjacent covered moorage areas on the same float system shall be a minimum of sixteen (16) feet or 33 percent of the longest finger float whichever is greater. Unroofed areas may be used for moorage.

(5) The areas listed in the table, including those for single boat houses may be tripled if the boat house or the covered boat moorages are provided throughout with an automatic fire sprinkler system. The area of individual boat houses may be tripled if the boat house alone is fire sprinklered, but no area increase is permitted for the combined boat house areas unless all the boat houses and open boat covers are fire sprinklered.

(6) The areas of open boat covers and the combined area of boat houses may be increased for yards or open spaces in accordance with the provisions of the Building Code. The area of individual boat houses shall not be increased for yards or open spaces.

## **d. STRUCTURAL DESIGN CRITERIA**

### **1. VERTICAL DESIGN LOADS.**

A. Float systems including the finger floats shall be designed to support all dead loads plus a superimposed live load of twenty (20) pounds per square-foot over their entire walking surface.

B. Covers or boat houses supported by a float system shall be designed to support all dead loads plus a snow load of twenty (20) pounds per square-foot.

**EXCEPTION:** Boat storage covers or boat houses with roofs with a minimum slope of six (6) vertical to twelve (12) horizontal with a metal surface may be designed for a twelve (12) pound per square foot snow load, provided any corrugations in the metal roofing run parallel to the roof slope, and space is provided to receive the snow sliding off the roof. If the receiving area for sliding snow is to be a float or finger float, sufficient flotation shall be provided to support the snow based on twenty (20) pounds per square-foot of roof surface, plus twenty (20) pounds per square-foot for the float or finger float surface.

Float systems supporting covers or boat houses shall be designed to support the dead loads and snow loads contributed by the covers or boat houses plus the live and dead loads prescribed in item A above.

C. Float systems, including the finger floats shall be designed to withstand a minimum concentrated load at any location on the walking surfaces of five-hundred (500) pounds, without causing any of the elements of the float system to tilt more than six (6) degrees from level. The concentrated load is to be located at any thirty (30) by thirty (30) inch square on the walking surface and shall be applied simultaneously with the uniform load. Snow loading on covers or boat houses may be reduced to ten (10) pounds per square-foot while applying the concentrated loads.

D. Gangways shall be designed to support a minimum of fifty (50) pounds per square-foot live load over their horizontal projected area at Mean Higher High Water, along with all dead loads. Gangways shall also be designed to support a concentrated load of one-thousand pounds (1000) pounds on any thirty (30) by thirty (30) inch square on the gangway, however the concentrated load need not be applied simultaneously with the required uniform load. The reaction of the gangway under full load shall not cause the main float to tilt out of level by more than six (6) degrees.

### **2. WIND DESIGN LOADS**

The float systems and their anchorages shall be designed to withstand wind as prescribed in the building code, however the design wind load need not exceed twenty (20) pounds per square-foot. The wind load shall be applied to the projected areas of the covers, boat houses and moored vessels. It shall be assumed that all berths are occupied. Covers and boat house structures shall be designed to withstand wind uplift loads as prescribed in the Building Code.

### **3. STRESSES INDUCED BY WAVES**

A. Vertical Loads: Float systems shall be designed to carry all dead loads, plus 20 PSF live load on all walking surfaces, plus 20 PSF snow load on all covers supported by the float system, over a span of not less than ten (10) feet. The float system shall be able to carry these loads over the design spans in both the transverse and longitudinal directions.

B. Lateral Loads: In addition to the wind loads, float systems and their anchorage systems shall be designed to resist lateral loads induced by wave action. Unless supported by a dynamic analysis, those float systems and their anchorage systems protected by breakwaters or otherwise sheltered from wind and waves or are subject to waves with heights of two (2) feet or less, shall be designed to withstand lateral loads of not less than one-half (1/2) gravity. Those float systems exposed to open water, or subject to waves in excess of two (2) feet in height shall be designed to withstand lateral loads of not less than full gravity. The calculation of lateral forces shall be based on the total dead load of the float system and all structures supported by the float system.

### **4. SPECIAL LOADS**

Guardrail and Handrail Assemblies: Guardrail and Handrail assemblies shall be designed to withstand a load of not less than twenty (20) pounds per lineal foot applied horizontally at the top most rail of the guardrail and handrail assembly.

### **5. SPECIAL CONSIDERATIONS**

Provision shall be made to prevent individual boat houses from "hammering" into each other.

#### **e. CONSTRUCTION MATERIALS:**

##### **1. FLOTATION MATERIALS:**

A. Timber logs and other wood flotation shall not be used within float systems in Marinas.

EXCEPTION: Wood flotation may be approved by the Building Official when unusual circumstances warrant its use.

B. Foam flotation shall meet the following minimum specifications:

i. Physical Properties:

Density: Not less than 0.9 pounds per cubic foot.  
(ASTM D-1622)

Compressive Strength: Not less than 10 psi.  
(ASTM D-1621)

Flexural Strength: Not less than 25 psi ultimate  
strength. (ASTM C-203)

Moisture Absorption: The maximum water absorption

shall be not greater than four (4) percent when tested by the immersion method. (ASTM C-272)

ii. Chemical Properties:

Hydrocarbon Resistance: Foam flotation to be used within flotation systems shall be resistant to the chemical reaction with hydrocarbon fuels and lubricants or protected by an approved encapsulation system.

iii. Protection from Mechanical Damage: Foam flotation systems shall be protected from direct contact by vessels, floating debris and foot traffic by wood or concrete decking and wood or concrete fender or skirt systems.

C. Steel or metal flotation systems are not permitted in salt water applications but may be used in fresh water marinas.

EXCEPTION: The Building Official may permit steel or metal flotation systems in applications which are temporary. Approvals shall be limited to a maximum of one-year. An additional year may be approved if, on inspection after the first year, it is determined that the flotation system is in good condition.

D. Concrete pontoon floats shall be constructed using an approved concrete design mix of not less than six (6) sacks of cement per cubic yard, and a 28 day ultimate strength of not less than 4000 pounds per square inch. The concrete mix shall meet ACI specifications for use within a salt water environment and to provide corrosion resistance for the structural, temperature and shrinkage reinforcement within the concrete pontoons. Concrete pontoon reinforcing shall be epoxy coated. The interior cavity of the concrete pontoons shall be filled with foam flotation meeting the requirements of this code.

E. Fueling Floats: All floats used for fuel docks shall have a portland cement concrete or other approved nonabsorbent surface impervious to fuel spillage.

## **2. DECKING, FENDER, AND FLOAT ENCASEMENT MATERIALS:**

Decking, fender and float encasement materials shall be sized to withstand the design loads, both vertical and horizontal as prescribed by this code. Materials shall be compatible with the marine environment.

Wood materials shall be pressure treated meeting U.B.C. Standard 25-12.

Concrete materials shall have a minimum compressive stress of 4000 psi at 28 days. Concrete mixes shall have a minimum of six (6) sacks of cement per cubic yard.

Metal materials shall be galvanized, painted or otherwise coated to retard corrosion, and if necessary cathodically protected.

### **3. BOAT HOUSE AND BOAT COVER FRAMING:**

Boat house and boat cover framing shall be sized to meet the design criteria prescribed in this code, for both vertical, horizontal and uplift loads.

Materials shall meet the requirements for decking, fenders and float encasement as prescribed in item No. 2 above for a minimum distance of three (3) feet above the float system. From three (3) feet above the float system, framing materials shall comply with the Building Code.

### **4. BOAT HOUSE AND BOAT SHED ROOF AND WALL COVERINGS:**

Boat house and boat shed roof and wall coverings shall be galvanized or painted steel. Approved wood-based structural panels manufactured with exterior glue may be used in boat houses, under the steel roof or wall covering, to provide vertical and/or lateral strength. Such structural panels shall not be directly exposed to the weather, and shall not be used in locations which become submerged or are subject to water splash.

#### **EXCEPTION:**

Approved wood-based structural panels manufactured with exterior glue may be used in open boat covers for the construction of gusset plates.

#### **f. DRAFT CURTAINS:**

Open boat sheds shall be provided with draft curtains spaced not to exceed sixty (60) feet on center, measured along the axis of the main float, and areas between draft stops shall not exceed 4000 square-feet. Draft curtains shall be constructed of galvanized or painted steel sheathing of a minimum 26 gauge thickness or shall be of approved wood based structural panels manufactured with exterior glue and having a minimum thickness of 15/32 inches. Draft curtains shall extend from a point eight (8) feet above the deck of the float system to the roof sheathing and shall extend across the entire the covered moorage perpendicular to the main float.

Section 3. That chapter 3.02 of the Official Code of the City of Tacoma is hereby amended by the addition of a two new sections to be numbered 3.02.103 and 3.02.106.

### **3.02.103 AMENDMENT TO APPENDIX II-C (Uniform Fire Code) MARINAS, SECTION 5(a) by the ADDITION OF TWO NEW SUBSECTIONS 4 AND 5.**

#### **5. FIRE PROTECTION EQUIPMENT**

(a) 4. During the period when the risk of freezing is minimal, a water supply either from the public supply system or from an approved pumping station shall be provided which is capable of delivering one-hundred (100) gallons per minute at fifty (50) pounds per square-inch pressure at the most remote hose station. Piping for the supply system shall be hydraulically designed, but in no case shall be smaller one and one-half (1-1/2) inch diameter. Pumps are not required to be listed, however pumps and the pump system are subject to the approval of the Fire Chief.

Approved pumping stations shall consist of an installation with a minimum of two pumps, one of which is backed up by emergency power or is directly powered by an internal combustion engine.

(a) 5. Supply piping may be of any material approved for fire protection service as set forth in the Uniform Building Code Standards, except "black" steel pipe.

**3.02.106 AMENDMENT TO APPENDIX II-C (Uniform Fire Code) MARINAS, BY ADDITION OF NEW SECTION 10 ENTITLED: OPERATIONAL RESTRICTIONS.**

10. OPERATIONAL RESTRICTIONS.

a. Spray painting or fiberglass work shall not be permitted within the boat moorage areas.

EXCEPTION: Patchwork one-square foot or less in area.

b. No engine work aboard vessels shall be done without providing and using mechanical ventilation.

c. Heaters, on board vessels, shall be equipped with automatic overturn and over-temperature shutoff devices.

d. Heat lamps and light bulbs aboard vessels shall not be left on while unattended.

e. LPG and LNG cylinder filling operations shall be conducted on shore, a minimum of fifty (50) feet from wood frame buildings and twenty (20) feet from noncombustible buildings.

EXCEPTION: Open sided noncombustible shelters for LPG and LNG dispensing equipment with an area of five-hundred (500) square-feet or less shall be permitted.

f. LPG facilities and operations shall conform to NFPA Standard 58, and LNG facilities and operations shall conform to NFPA Standard 52.

g. It shall be the responsibility of the marina owner or manager to maintain compliance with the provisions of this section when accepting new or or moved covered moorage.

(1). In all cases where floating structures are moved into or within the City of Tacoma, a building permit shall be required. As a condition of the building permit, the floating structure shall be upgraded to meet the requirements set forth in Chapter 2.13 of the Official Code of the City of Tacoma.

(2). All electrical wiring shall comply with the Official Electrical Code of the City of Tacoma as adopted by Chapter 2.04 of the Official Code of the City of Tacoma, and also shall comply with the Department of Public Utilities, Light Division service policies.