



**PUGET SOUND PILOTS**  
Protecting Puget Sound Since 1935

# GENERAL GUIDELINES FOR VESSELS TRANSITING RESTRICTED WATERWAYS OR PORTS

Revised: March 5, 2018

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## GENERAL DEFINITIONS

1. **Tugs.** Unless a more specific requirement is expressed, any reference to “tugs” in these guidelines refers to tugs of suitable power and configuration for the transit.
2. **Minimum Requirements.** These guidelines are minimum requirements and may be modified depending upon the circumstances of any particular transit.
3. **Tug Configuration and Rating.** Specific tug references in these Guidelines refers to:
  - a. Tractor Class tugs are tugs powered by two or more omni-directional propulsion units, being fitted with Voith Schneider or Azimuth Stern drive or Azimuth Tractor drive.
  - b. Conventional Class tugs are tugs powered by twin screw propellers.
  - c. Tug Ratings refer to the following minimum ahead bollard pull in metric tons:

### Tractor Class

Class Rating	Metric Tons
T8	≥75
T6	≥60
T5	≥50
T4	≥40

### Conventional Class

C6	≥60
C4	≥40
C2	≥20

- d. In cases where a T8 class tug is specified, two T5 tugs or one T5 and one T4 tug may be substituted.
  - e. Vessels with bollards and/or chocks rated below the tonnage of the assigned tugs may require additional tugs to enable the effective application of the tug’s power.
4. **Bow Thruster.** Unless a more stringent requirement is expressed, any reference to “Bow Thrusters” in these guidelines refers to a fully documented and available bow thruster of suitable power. If the bow thruster is not fully functional, an additional tug(s) may be required.

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5. **4% Bow Thruster.** As used in these guidelines, the term “4% Bow Thruster” refers to bow thruster(s) with documented and 100% available horsepower (1.36 HP/KW) greater than or equal to 4% of the vessel’s certified deadweight tonnage (DWT).

## **VESSEL SPACING**

1. It is recommended that all final berthing positions provide for a minimum of 10% of the vessels length in clearance to other vessels (including barges) or shoal areas.
2. For Vessels over 900 feet in length it is recommended that all final berthing positions provide for a minimum of 100 feet clearance to other vessels (including barges) or shoal areas.

## **HORIZONTAL CLEARANCE**

1. With the exception of the Duwamish River and Hylebos Waterway, there should be net horizontal clearance available at all times to a transiting/maneuvering vessel of at least 140 feet, meaning a minimum of 70 feet clearance on each side when the vessel is in the center of the available waterway. Net clearance means open water between vessels, gantry cranes, bunker barges/tugs/spill booms, fishing nets, shoals or any other obstructions.
2. Vessels having a beam of 140 feet or wider should not pass a bunker barge while in operation when alongside a vessel in any of the Seattle/Tacoma waterways.

## **UNDER-KEEL CLEARANCE IN ALL PORTS and WATERWAYS**

1. Vessels exceeding 400 feet in length transiting restricted waterways and channels will be dispatched to maintain a minimum under-keel clearance of three (3) feet or 10% of draft, whichever is greater, during the transit, provided that vessels may have less under-keel clearance when berthing, un-berthing and alongside the dock. Vessels shall remain afloat at alltimes.
2. While the above guideline is general in nature, it is noted that the determination of an appropriate minimum under-keel clearance for a specific vessel transiting a specific waterway or channel must take into account many factors in addition to vessel draft and least depth, including but not limited to: vessel size, configuration, speed, trim, and list; the shape, size and hydrography of the waterway; and variations from predicted tide levels.

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## TANKERS UNDER ESCORT

1. A second escort tug should be dispatched to oil tankers of 40,000 to 50,000 DWT transiting in any of the following areas if the vessel is not in ballast and if the deck fitting to which the escort tug is made fast has a Safe Working Load of less than 100 metric tons:
  - a. Rosario Strait between Davidson Rock and Buoy CA.
  - b. Transits to or from Vendovi Island anchorages.
  - c. Transits to or from Anacortes.
  - d. Transits of Haro Strait-Boundary Pass.
  
2. A second escort tug should be dispatched to oil tankers of greater than 50,000 DWT when transiting in any of the following areas if the vessel is not in ballast and if the deck fitting to which the escort tug is made fast has a Safe Working Load of less than 200 metric tons:
  - a. Rosario Strait between Davidson Rock and Buoy CA.
  - b. Transits to or from Vendovi Island anchorages.
  - c. Transits to or from Anacortes.
  - d. Transits of Haro Strait-Boundary Pass.

## VESSEL & TERMINAL GANTRY CRANE SAFETY

It is recommended that all terminal operators with gantry cranes adopt the following Best Practices:

1. When vessels are berthing or unberthing at the terminal:
  - a. Prior to a vessel's arrival or departure from a berth, gantry cranes at the berth should be boomed up and positioned close together near the midships section of the vessel (avoiding the vessel's bow and stern flair).
  - b. Gantry cranes should not be moved when a vessel is berthing or unberthing.
  - c. It is recommended no person be allowed aloft on a gantry crane during berthing or unberthing operations.

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2. When vessels using the waterway are passing the terminal:
  - a. Gantry crane booms should be topped up over empty berths when a vessel is transiting/maneuvering past. If a boom cannot be topped up, advance notice should be given to PSP.
  - b. There should be net horizontal clearance available at all times to a transiting/maneuvering vessel of at least 140 feet, meaning a minimum of 70 feet clearance on each side when the vessel is in the center of the available waterway.
  - c. Gantry cranes over working berths can remain boomed down provided the net clearance conditions above are met.

## **INCLEMENT WEATHER and WIND**

1. Decisions relating to vessel movements requiring more than 50 tons of force to hold the vessel against a wind from any direction will be made on a case-by-case basis by the pilot depending on direction and force of wind and the type and characteristic of the vessel.
2. Wind on the beam is one of the factors used in evaluating the counter force necessary for tugs and or thrusters on a particular transit. The formula below calculates the approximate static tons of beam wind exerted upon a vessel based on its sail area. Agents and operators ordering pilots are encouraged to provide to the dispatcher the specific sail area of a vessel when ordering a pilot.

$$\text{Static Metric Tons of Wind on the Beam} = \frac{(V^2/18) \times \text{Sail Area}}{1000}$$

**Sail Area = Square meters determined by Length (m) x Height (m) (Height is freeboard plus highest container row)**

**V = Wind velocity in meters per second. (Knots of wind ÷ 1.944)**

## **ANACORTES - PORT DOCKS**

1. Vessels exceeding 400 feet in length arriving or departing berths port-side-to should plan to transit during flood current, at slack current, or when the ebb current is 0.5 knot or less.
2. Vessels exceeding 400 feet in length arriving or departing berths starboard-side-to should plan to transit during ebb current, slack current, or when the flood current is 0.5 knot or less.

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**BELLINGHAM - SQUALICUM WATERWAY**

1. Vessels exceeding 300 feet in length should plan to transit on a rising tide and be dispatched with at least two tugs. If the vessel has a 4% Bow Thruster, one tug may be sufficient depending on vessel size.
2. Transits to or from Bellingham Cold Storage should be daylight only unless Squalicum Creek Waterway Buoy #2 is lighted and the lighted ranges are operational.

**EVERETT**

1. Vessels less than 660 feet in length should be dispatched with two tugs, C2 class or greater. Vessels less than 660 feet in length with a 4% bow thruster may be dispatched with one tug, C2 class or greater.
2. Inbound vessels greater than 660 feet in length should be dispatched with two tugs, C2 class or greater. Outbound vessels greater than 660 feet with a 4% bow thruster may be dispatched with one tug, C2 class or greater.
3. Car ships of any tonnage and all other vessels greater than 38,000 GT should be dispatched with two tugs, T4 class or greater. This requirement is subject to case by case review by the president of Puget Sound Pilots considering the particular berth assignment, weather and any other anticipated conditions at the time of the transit.
4. All vessels greater than 60,000 GT should be dispatched with two tugs, T5 class or greater.

**FERNDALE - PHILLIPS REFINERY**

1. Tankers berthing at the Phillips-66 Refinery wharf will be starboard side alongside.
2. Docking of all vessels is based on adequate tugs and acceptable weather conditions, and should take place at the following times:
  - a. High water or low water slack current, or
  - b. During ebb currents, except during the two hours of maximum flow on an ebb current with a maximum velocity exceeding 3 knots.

*NOTE: Times of predicted slacks and maximum currents are based on Rosario Strait except that the slack water time before the ebb current will be Rosario Strait plus one and one-half (1-1/2) hours. Velocity refers to that published for Rosario Strait.*

3. Tankers may be dispatched with an additional tug(s) if dictated by the prevailing circumstances.

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## **GUEMES CHANNEL/GREEN POINT**

Unless the predicted Rosario Strait current at Green Point is one knot or less, tankers inbound to Anacortes anchorages, Shell or Tesoro via Guemes Channel and not in ballast, should arrive at Green Point at predicted slack current, plus or minus 30 minutes. ATBs, slack current plus or minus 60 minutes.

## **OLYMPIA**

1. Arriving vessels. Vessels with a draft of 25 feet or more should be limited to entering the channel on a rising tide at least 1 hour before high water. All vessels over 300 feet in length should be dispatched with at least two tugs except that a vessel may be dispatched with one tug if it has a 4% Bow Thruster and an unobstructed waterway and turning basin.
2. Departing Vessels. Vessels with a draft of 25 feet or more should depart on a rising tide. All vessels over 300 feet in length should be dispatched with a minimum of two tugs unless: 1) it has one tug and a 4% Bow Thruster and is departing bow out, or; 2) it has one tug and the vessel is departing an unobstructed waterway and turning basin, bow out, 1 to 2 hours before high water.
3. Vessels over 700 feet in length. All transits of vessels with a LOA over 700 feet should be discussed with the President of Puget Sound Pilots well in advance.

## **PORT ANGELES HARBOR**

The following vessels will be dispatched with at least one assist tug when underway in Port Angeles Harbor:

1. Laden petroleum tankers of any size and LPG/LNG cargo vessels exceeding 40,000 DWT.
2. Vessels exceeding 800 feet in length with a draft of 40 feet or more.
3. Any vessel exceeding 40,000 DWT when a laden petroleum tanker or LPG/LNG cargo vessel is already at anchor.
4. All oversized tank vessels that have been re-measured to less than 125,000 DWT.

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**PORT TOWNSEND HARBOR /INDIAN ISLAND**

1. Vessels exceeding 600 feet in length or 30 feet in draft should enter and exit Port Townsend Harbor within 1 hour of predicted slack current at "Point Wilson - .8 mile east of".
2. Vessels 600 feet and longer going to or from a berth should be dispatched with a minimum of two T5 class tugs.
3. Vessels less than 600 feet in length going to or from a berth should be dispatched with a minimum of two tugs unless:
  - a. They have a 4% Bow Thruster in which case one tug may be used; or
  - b. The vessel has special characteristics and other arrangements have been made with the President of Puget Sound Pilots.
4. Ships exceeding 38 feet in draft going to or from anchor should have a minimum of one T4 class tug for assist.

**SEATTLE - SHILSHOLE BAY TO LAKE WASHINGTON*****ALL VESSELS:***

1. Vessels exceeding 500 feet in length or 68 feet in beam are not considered suitable for transit from Shilshole Bay through the Hiram Chittenden Locks and the Lake Washington Ship Canal. Exceptions to the above must be discussed with the President, Puget Sound Pilots well in advance of the intended transit date.
2. Tug assistance, time of transit, and other restrictions may be imposed during times of significant fresh water runoff or fish net congestion.
3. Adequate fenders, as specified by the Lockmaster, are required for transiting locks.

***VESSELS EXCEEDING 300 FEET IN LENGTH***

1. Transit of the Shilshole Bay Entrance Channel is to be made on a rising tide, height of tide zero (0) feet or greater.
2. All vessels should be dispatched with a minimum of two tugs except that one tug may be dispatched to a vessel with a 4% Bow Thruster.

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**SEATTLE - ELLIOTT BAY DOCKS***PIER 90 AND PIER 91*

1. All cargo vessels should be dispatched with a minimum of two tugs except that one tug may be dispatched to a vessel with a 4% Bow Thruster.
2. East Side of Pier 90. Vessels maneuvering around berthed vessels at Berths 2, 4 and 6 on the East Side of Pier 90 should be dispatched on a 6 feet or greater tide and if the combined beam of both vessels is greater than 140 feet, the transit should be discussed with the President, Puget Sound Pilots well in advance of the intended transit date.

*TERMINALS 46 NORTH AND SOUTH*

1. All vessels less than 900 feet in length should be dispatched with a minimum of two T4 class tugs except that vessels with a 4% or greater bow thruster may be dispatched with one T4 class tug *if there is no lowered crane or ship at any other berth.*
2. All vessels 900 feet or greater in length should be dispatched with a minimum of one T5 class and one T4 class tug. Outbound vessels with a 4% or greater bow thruster may be dispatched with one T5 class tug *if there is no lowered crane or ship at any other berth.*
3. All vessels over 115,000 GT should be dispatched with at least two T5 class and one T4 class tugs. Outbound vessels with a 4% or greater bow thruster may be dispatched with one T5 class and one T4 class tug.
4. Transit of vessels greater than 145,000 GT shall be discussed with the President of Puget Sound Pilots well in advance of arrival. PSP will determine the appropriate tug package and any transit conditions/restrictions based on the vessel particulars and anticipated port conditions at the time.

*ALL OTHER ELLIOTT BAY DOCKS*

All cargo vessels should be dispatched with at least two tugs except that vessels with a 4% Bow Thruster may be dispatched with one tug if no adverse conditions of obstruction, wind, current or freshet runoff exist.

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**SEATTLE - EAST WATERWAY**

1. Vessels less than 900 feet in length should be dispatched with a minimum of two T4 class tugs except that one T4 class tug may be dispatched to:
  - a vessel that will not pass moored vessels on both sides of the waterway and that has a 4% Bow Thruster and a draft of less than 36.2 feet, or;
  - A vessel with a 4% Bow Thruster departing Terminal 18 berths 1 or 2 if berth 1 and Kinder Morgan are unoccupied.
2. Vessels 900 feet or greater in length, or greater than 55,000 GT should be dispatched with a minimum of two T5 class tugs, except that one T5 class tug may be dispatched to a vessel with a 4% Bow Thruster Departing T-18 berths 1 or 2 if berth 1 and Kinder Morgan are unoccupied and no cranes are down north of the vessel.
3. Vessels greater than 110,000 GT or having a beam over 149 feet should be dispatched with a minimum of two T5 class tugs and one T4 class tug. For outbound vessels heading bow out with a 4% Bow Thruster, a minimum of two T5 class tugs may be acceptable provided there are no vessels berthed between the vessel and Elliot Bay.
4. Vessels greater than 120,000 GT should be dispatched with a minimum of three T5 class tugs.
5. Transit of vessels greater than 145,000 GT shall be discussed with the President of Puget Sound Pilots well in advance of arrival. PSP will determine the appropriate tug package and any transit conditions/restrictions based on the vessel particulars and anticipated port conditions at the time.

**SEATTLE - WEST WATERWAY**

1. All vessels less than 900 feet in length should be dispatched with a minimum of two T4 class tugs except that one tug may be dispatched to a vessel with a 4% Bow Thruster.
2. All vessels 900 feet or greater in length, or greater than 55,000 GT should be dispatched with a minimum of two T5 classtugs.
3. Vessels greater than 110,000 GT should be dispatched with a minimum of two T5 and one T4 class tugs. For outbound vessels heading bow out with a 4% Bow Thruster, a minimum of two T5 class tugs may be acceptable provided there are no vessels berthed between the vessel and Elliot Bay.
4. Vessels greater than 120,000 GT should be dispatched with a minimum of three T5 class tugs.

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5. Transit of vessels greater than 145,000 GT shall be discussed with the President of Puget Sound Pilots well in advance of arrival. PSP will determine the appropriate tug package and any transit conditions/restrictions based on the vessel particulars and anticipated port conditions at the time.

## SEATTLE - DUWAMISH WATERWAY

1. Strong ebb currents caused by freshet conditions and/or extreme low waters may require waterway transits to begin between one and two hours before the predicted high water. At the discretion of the pilot, additional restrictions may be required depending on conditions.
2. Air draft clearance with the fixed West Seattle Freeway bridge span needs to be at least 2 meters (6.6 feet) at the time of transit.

**NOTE:** Air draft clearance may be determined by the following formula:

Clearance (in feet) = 150.4 - **Ht** - **Hb** + **D** where:

150.4 = 140 clearance + 10.4 mean high water datum

**Ht** is height of tide at time of transit

**Hb** is height of ship from base line to mast top, or highest point of ship

**D** is draft of ship in way of highest point on ship

3. All vessels transiting the Duwamish Waterway should be dispatched with a minimum of two tractor tugs except that a vessel with a 4% Bow Thruster may be dispatched with one tractor tug, depending on vessel size and other prevailing conditions. All assist tugs are at the discretion of the pilot.
4. Waterway transits of vessels exceeding 400 feet in length should be dispatched with two tractor tugs and are to begin 1 to 2 hours before the predicted high water or approximately 1 hour after the predicted low water.
5. Vessels Exceeding 80 Feet in Beam or 650 feet in length will be dispatched with two pilots and the transit may require discussion with the President, Puget Sound Pilots, well in advance of the intended transit date.
6. Vessels Greater Than 95 Feet in Beam are not considered suitable for transit through the Burlington Northern railroad bridge.
7. Fishing Season. All vessels during the fishing season should be dispatched for daylight transit only.

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**TACOMA - BLAIR WATERWAY NORTH OF 11th STREET**

1. All vessels less than 900 feet in length should be dispatched with a minimum of two T4 class tugs except that one tug may be dispatched to a vessel with a 4% Bow Thruster.
2. All vessels 900 feet or greater in length should be dispatched with a minimum of two tugs, one T5 class and one T4 class, except that one T5 class tug may be dispatched to a vessel with a 4% Bow Thruster departing when there are no other vessels or obstructions in the waterway.
3. Vessels greater than 110,000 GT should be dispatched with a minimum of two T5 and one T4 class tugs. For outbound vessels heading bow out with a 4% Bow Thruster, a minimum of two T5 class tugs may be acceptable provided there are no vessels berthed between the vessel and Commencement Bay.
4. Transit of vessels greater than 120,000 GT should be dispatched with a minimum of three T5 class tugs.
5. Transit of vessels greater than 145,000 GT shall be discussed with the President of Puget Sound Pilots well in advance of arrival. PSP will determine the appropriate tug package and any transit conditions/restrictions based on the vessel particulars and anticipated port conditions at the time.

**TACOMA - BLAIR WATERWAY SOUTH OF 11th STREET**

1. Vessels with a beam of 100 feet or less should be dispatched with a minimum of two T4 class tugs.
2. Vessels exceeding 100 feet in beam should be dispatched with a minimum of two T5 class tugs, except that vessels having a 4% Bow Thruster may be dispatched with one T5 class and one T4 class tug.
3. Vessels exceeding 130 feet in beam should be dispatched with a minimum of two T5 and one T4 class tugs.
4. Vessels greater than 100,000 GT should be dispatched with a minimum of one T8 and two T5 class tugs.
5. Vessels greater than 120,000 GT should be dispatched with a minimum of two T8 class and one T5 class tugs.
6. Laden tankers exceeding 106 feet in beam should be dispatched with three tugs, two T5 class and one T4 class tugs. Vessels with a Bow Thruster and twin screws may be dispatched with two T5 class tugs.
7. **Second Pilot:** Vessels exceeding 130 feet in beam will be dispatched with two pilots.

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8. Vessels of unusual configuration, vessels greater than 155 feet in beam or 145,000GT, and all tank vessels in excess of 750 feet in length may require daylight transit as well as additional tugs or pilots. The transit of these vessels must be discussed with the President of Puget Sound Pilots well in advance of the intended transit date.

## **TACOMA - HYLEBOS WATERWAY**

1. All vessels should be dispatched with two tractor tugs and must have air draft clearance with the overhead power cables of at least 3.1 meters (10.0 feet) at the time of transit.

*NOTE: Air draft clearance may be determined by the following formula:*

Clearance (in feet) = 183.9 - **Ht** - **Hb** + **D** where:

**183.9** = 173 feet clearance + 10.9 mean high water datum

**Ht** is height of tide at time of transit

**Hb** is height of ship from base line to mast top or highest point of the ship

**D** is draft of ship in way of highest point on ship

2. Vessels may require additional tugs or pilots if the navigable channel is obstructed, provided that all transits should have a minimum unobstructed navigable channel (except for the 11th Street Bridge) of 70 feet plus the beam of the vessel.
3. At Schnitzer Steel port-side-to-berthing is not considered suitable.
4. Vessels exceeding 23 feet in draft-should plan to start transits between 1 and 1½ hours before predicted highwater.
5. Vessels exceeding 106 feet in beam are not considered suitable for transit through the 11th Street Bridge.
6. Vessels using the upper turning basin which are greater than 600 feet in length, both the Weyco (TPT) and Manke docks must be unoccupied.
7. Vessels exceeding 630 feet in length are not considered suitable for the upper turning basin.
8. Vessels of greater than 95 feet in beam and/or greater than 600 feet in length should transit during daylight hours if at all possible.
9. Vessels exceeding 80 feet in beam will be dispatched with two pilots.

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## TACOMA - SITCUM WATERWAY

1. Unless other more restrictive waterway guidelines apply, all vessels less than 900 feet should be dispatched with a minimum of two T4 class tugs except that one T4 class tug may be dispatched to an outbound vessel with a 4% Bow Thruster, heading bow-out, when there is no vessel on either side of the waterway between the vessel and Commencement Bay.
2. Unless other more restrictive waterway guidelines apply, all vessels 900 feet or greater should be dispatched with a minimum of two T5 class tugs, except that one T5 class tug may be dispatched to an outbound vessel heading bow-out with a fully functioning Bow Thruster departing the outer berth at either APM Terminals or Terminal 7 when the berth directly across the waterway is unoccupied.
3. At a minimum, two T4 class tugs should be dispatched to vessels transiting when there is a vessel berthed at Terminal Seven and another vessel berthed directly or almost directly across the waterway at the APM Terminals. In addition, all of the following conditions should be met:
  - The beam of the vessels should be such that there is a net clearance available at all times to the maneuvering vessel of 140 feet, meaning a minimum of 70 feet clearance on each side when the vessel is in the center of the available waterway.
  - **Two pilots** will be dispatched to vessels with a beam of 105 feet or greater making this transit.
4. Be advised that an individual pilot may decide not to move a vessel under certain conditions; when the container booms are lowered and the pilot believes they should be raised, or if the pilot believes the weather conditions are sufficiently adverse, or if the maneuver will require passing a bunker barge alongside another vessel in the waterway.

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