

Port of Olympia Marine Fueling Station Project

Fuel Dock Design Overview

KPFF Consulting Engineers

April 8, 2015

Fueling Station Feasibility Analysis

- Focus on the engineering & permitting requirements for installing a new fuel facility at the Port of Olympia;
- Provide the Port with a comprehensive analysis of the concepts, costs, and constraints associated with installation of a fuel dock in order to identify a “preferred” option;
- Reduce the risk of encountering unanticipated “fatal flaws” in the design and approval process

Feasibility Analysis - Sites Considered



NorthPoint

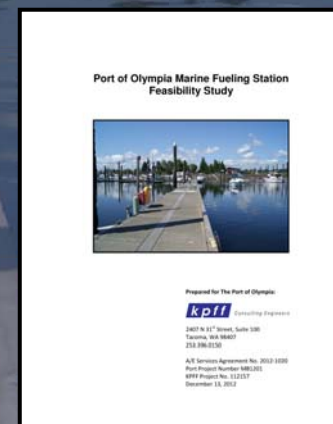
**Swantown
Marina A-dock**

**Port Plaza
Dock**

**Swantown
Marina South
Basin**

Feasibility Analysis - Conclusions

- Cost and permitting differences identify Swantown as the “preferred” site;
- Between the multiple options evaluated for Swantown, “Option D” is the preferred option.
- Feasibility Study Report issued December 13, 2012



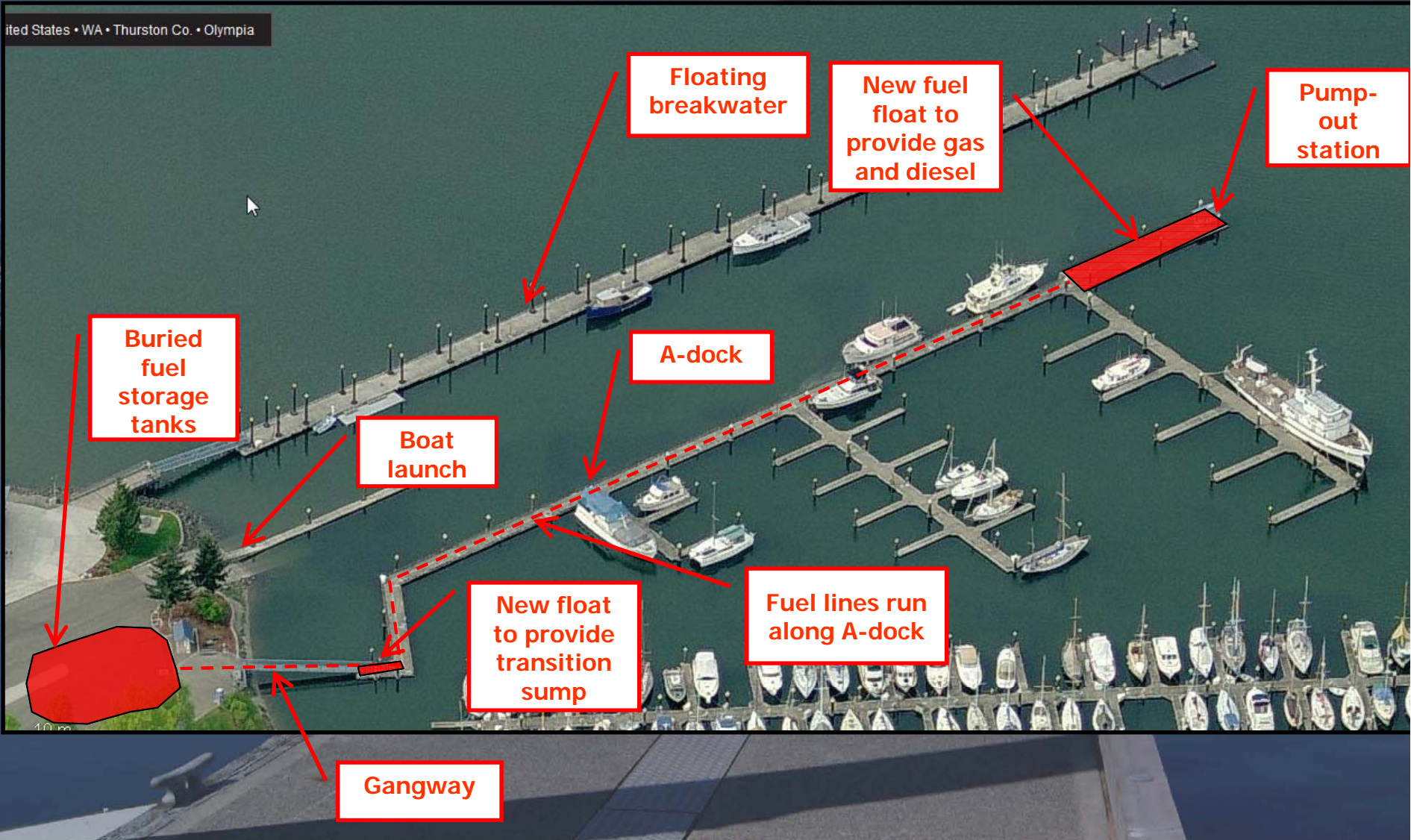
Fuel Dock Design – Existing Site

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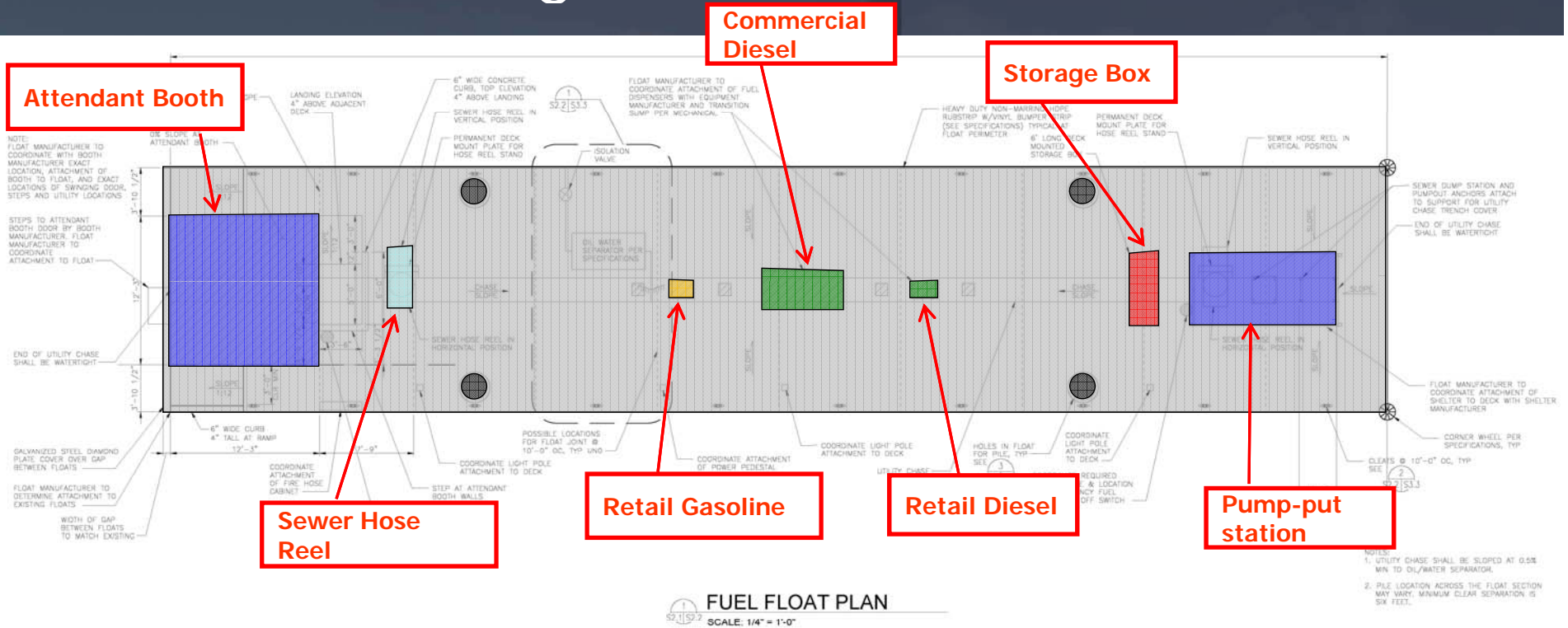


Fuel Dock Design – Proposed Site

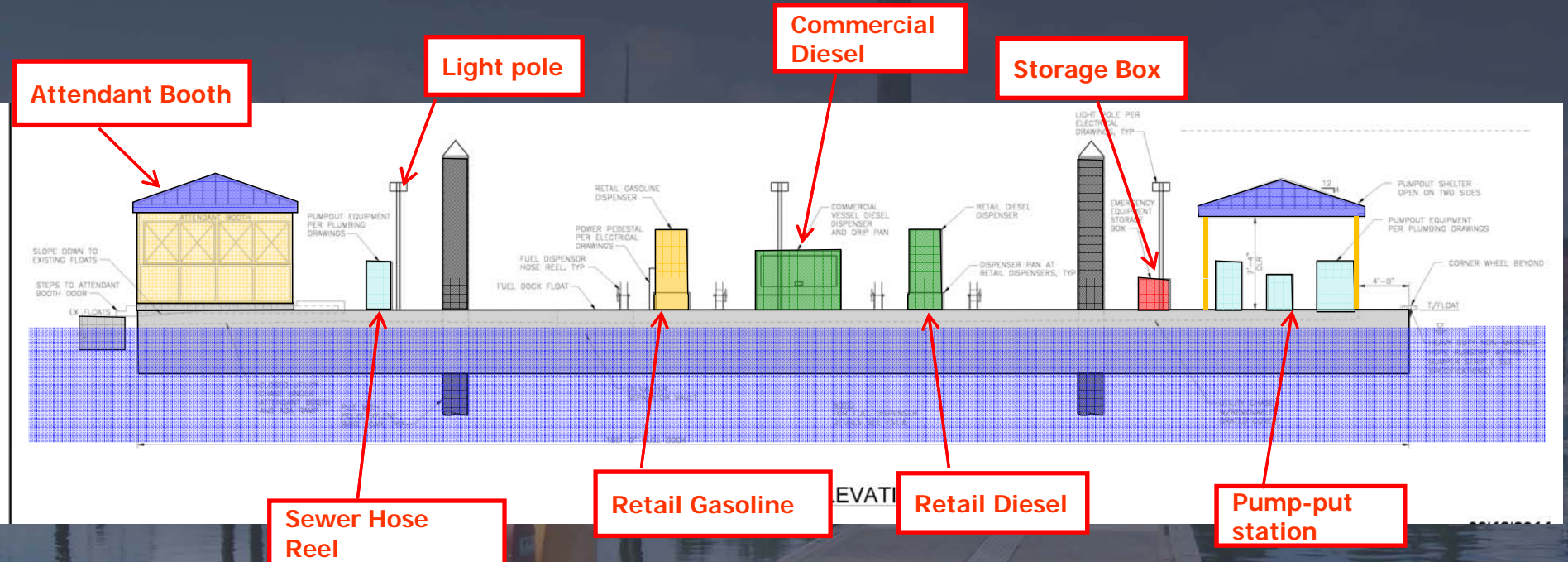
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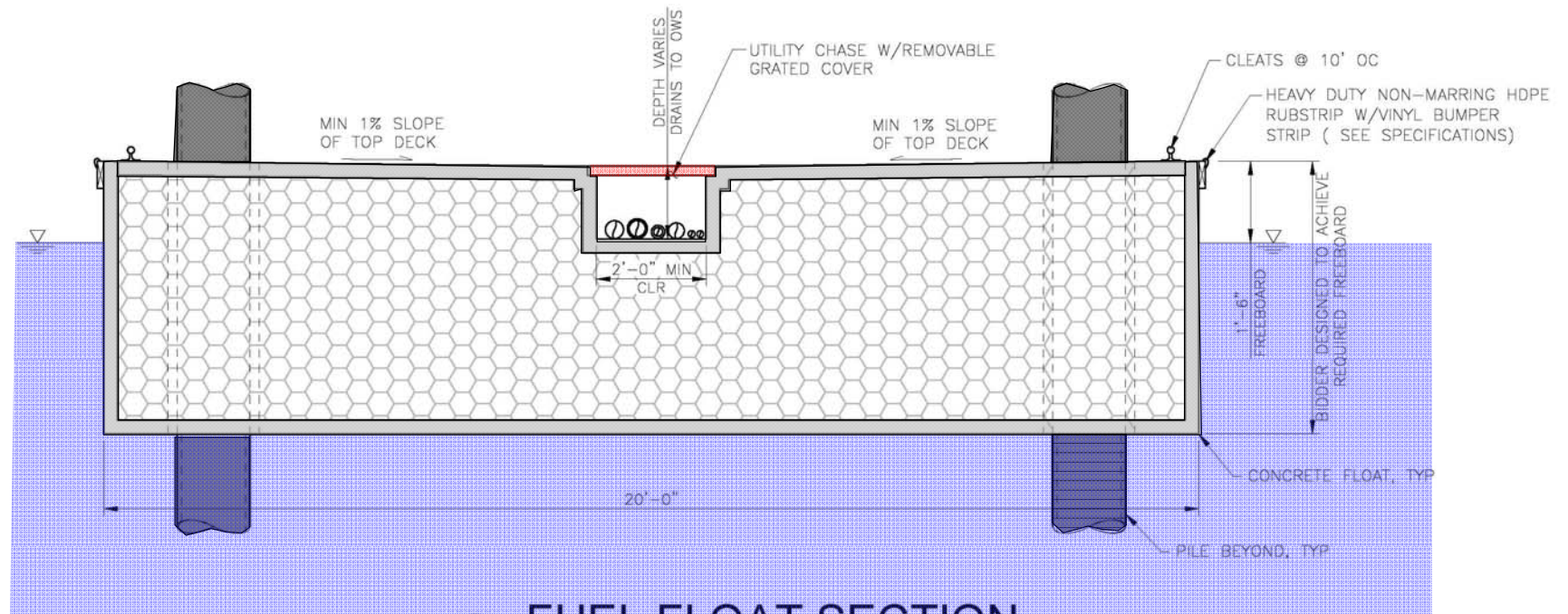
Fuel Dock Design



Fuel Dock Design



Fuel Dock Design



FUEL FLOAT SECTION
SCALE: 1/2" = 1'-0"



Design Codes & Reference Standards

- City of Olympia Municipal Code
- 2012 International Building Code (IBC)
- 2012 International Fire Code (IFC)
- National Fire Protection Association (NFPA) 30 – Flammable & Combustible Liquids Code

Design Codes & Reference Standards

- NFPA 303 – Fire Protection Standard for Marinas & Boatyards
- American Society of Civil Engineers (ASCE) No. 50 – *Planning and Design Guidelines for Small Craft Harbors*
- City of Olympia Drainage Design and Erosion Control Manual
- Petroleum Equipment Institute (PEI) – RP1000-09 *Recommended Practices for the Installation of Marina Fueling Systems*
- PEI – RP100-05 *Recommended Practices for Installation of Underground Liquid Storage Systems*

The Permitting Process

- Environmental Permitting Requirements:
 - Agencies Involved in Environmental Review/Approval of Project
 - United States Army Corps Of Engineers
 - Washington Department of Fish & Wildlife
 - Washington Department of Ecology
 - Washington Department of Natural Resources
 - City of Olympia
 - National Oceanic and Atmospheric Administration (NOAA) Fisheries

The Permitting Process

- Environmental Permitting Requirements:
 - Compliance with Applicable Regulations:
 - Endangered Species Act
 - Magnuson-Stevens Fishery Conservation and Management Act
 - Clean Water Act
 - Rivers and Harbors Act of 1899
 - Revised Code of Washington, Hydraulic Code
 - Coastal Zone Management Act
 - National Historic Preservation Act
 - City of Olympia Shoreline Master Program
 - Olympia Municipal Code
 - State Environmental Policy Act
 - Olympia Stormwater Management Manual

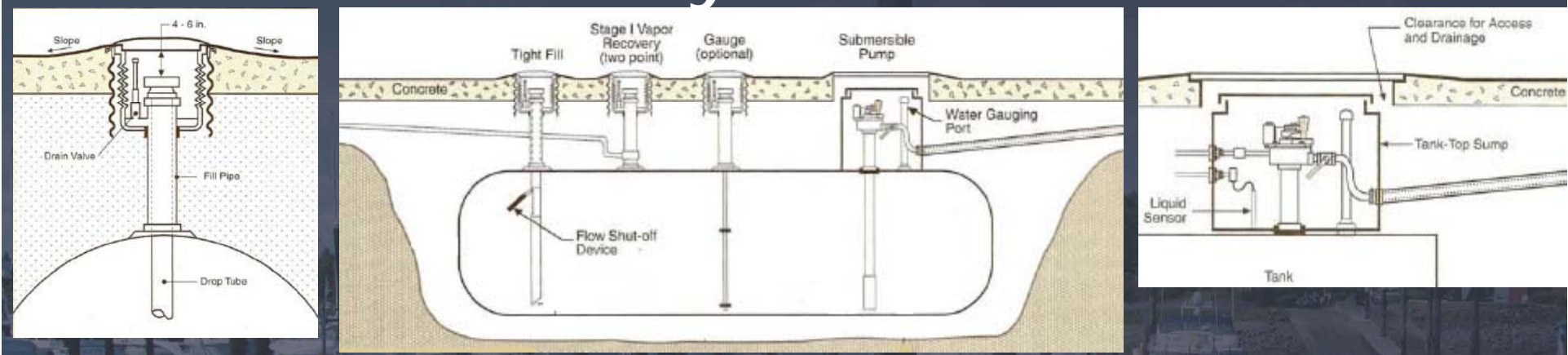
The Permitting Process

- Building Permit Requirements:
 - Local permits issued by the City of Olympia Community Planning and Development:
 - Site Development Permits:
 - Civil Engineering Permit (land use, utilities, and drainage)
 - Civil Engineering Water Permit (Domestic water line)
 - Demolition permit
 - Building Permits
 - Commercial and Multifamily Building Permits
 - Electrical Permit
 - Fire System Permit
 - Mechanical Permit
 - Plumbing Permit
 - Private Utility Permit

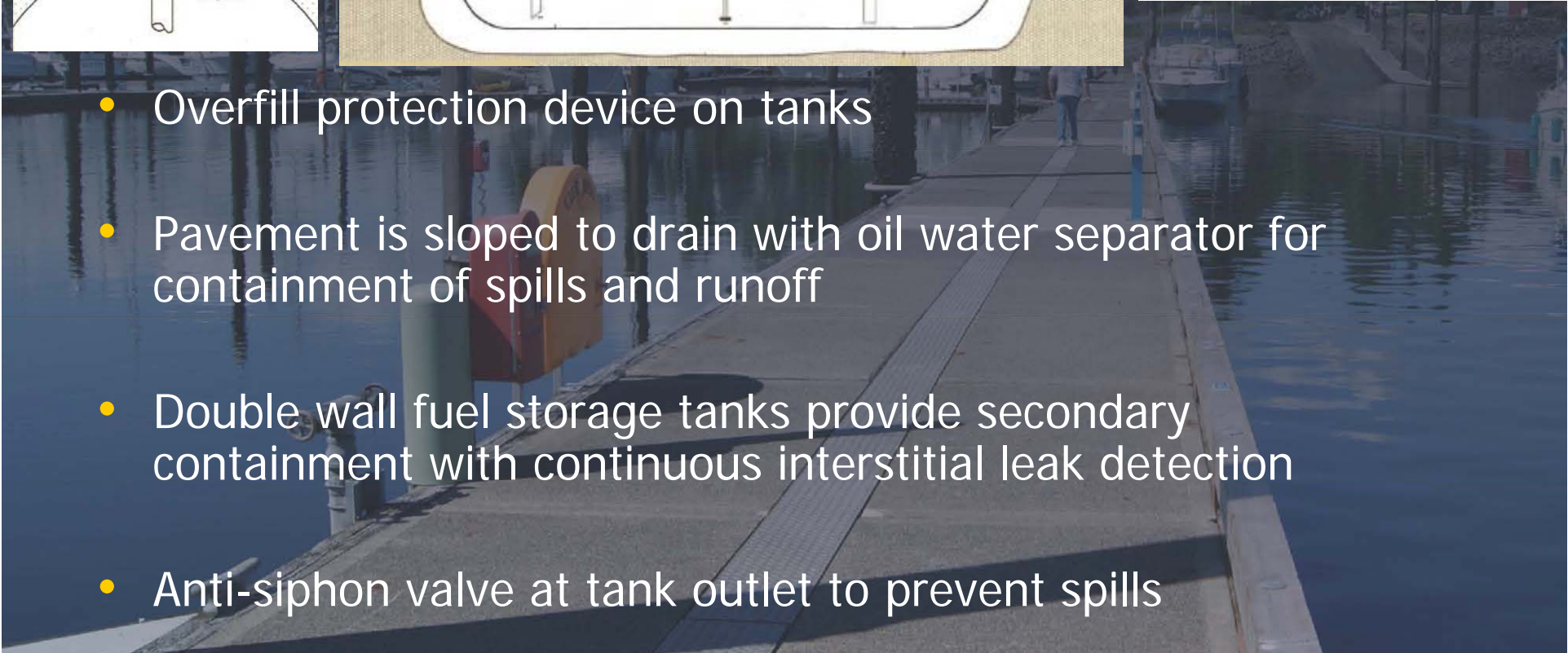
Fuel Dock Safety Features

- System tested for leaks during installation
- Inspection and Maintenance Program
- Spill prevention, Control and Countermeasure Plan
 - Oil spill clean-up equipment on site (both upland and at fuel float)
- Dispensing supervised by trained attendant for all on-dock fueling operations

Fuel Dock Safety Features *at Tanks*

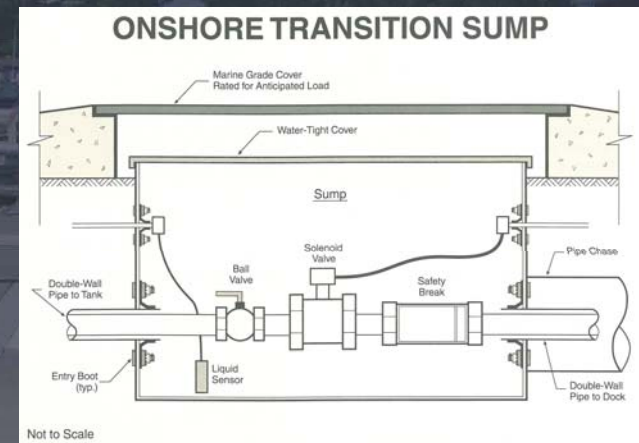


- Overfill protection device on tanks
- Pavement is sloped to drain with oil water separator for containment of spills and runoff
- Double wall fuel storage tanks provide secondary containment with continuous interstitial leak detection
- Anti-siphon valve at tank outlet to prevent spills



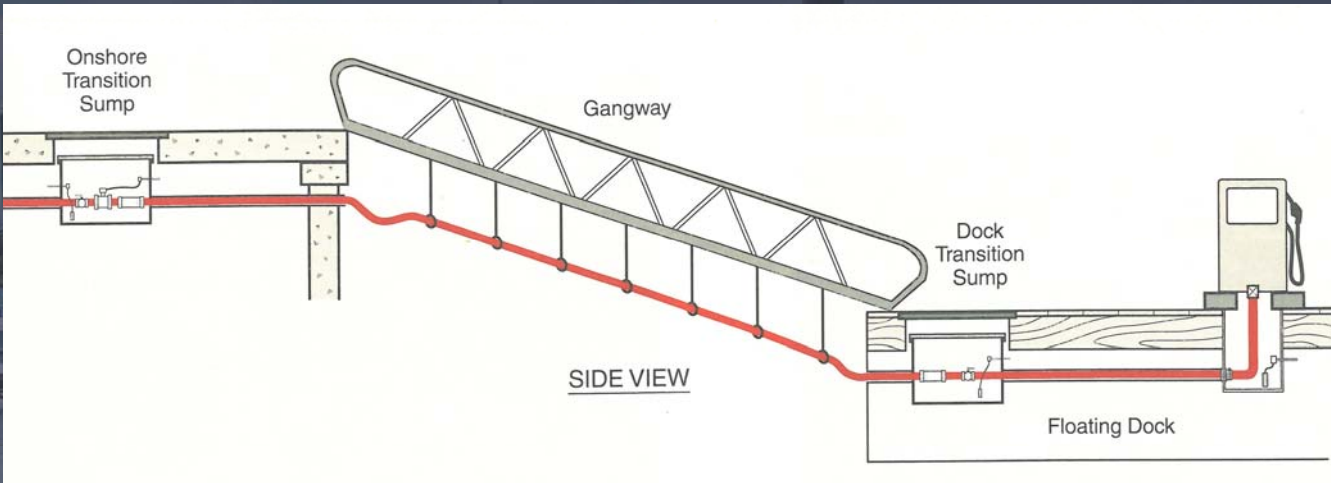
Fuel Dock Safety Features *at Underground Piping*

- Double wall pipes with line leak detector provides pump shutdown if leak of a certain size is detected
- Safety break in line minimizes release of fuel if pipe is pulled by a major accident at the dock
- Pipes slope to sump with continuously monitored leak sensor
- All sump penetrations are liquid tight
- Emergency pump shutoff switch at top of gangway

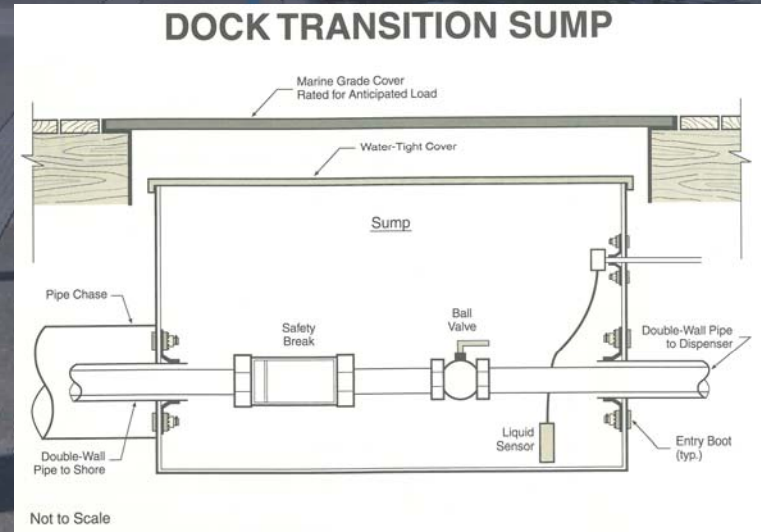


Fuel Dock Safety Features

Piping Over Water & On Floats



- Flexible pipe at gangway
- Dock sump at gangway has safety break and leak detection
- Double wall pipes on floats are contained in a utility chase



Fuel Dock Safety Features *at Dispenser Float*

- Float sloped to drain which contains and separates spills
- Nozzles require to be held to dispense fuel (pressure activated)
- Overfill protection device on dispensers
- Pressure regulating valve at dispenser reduces flow as tank close to full
- Sumps continuously monitored for leaks at dispensers



Fuel Dock Fire Safety Features

- Dedicated on-dock fire suppression standpipe system and fire extinguishers
- On-going hose testing & maintenance by OFD
- Pressure & flow testing of entire standpipe system
- Signage provided at each hose station standpipe outlet
- Fire alarm system
- Emergency pump shutoff switch at gangway and at float



Fuel Dock Attendant Training

- Fuel dock care and operation of equipment
 - Proper fueling procedures
 - Fuel system shutdown and restart
 - Leak alarms and how to respond
- Working over-water safety training
 - Securing watercraft while fueling
 - Over water fueling safety
- Fuel Best Management Practices (BMP'S)
- Operation of fire extinguishers

A white safety sign with black text is mounted on a wall. It lists instructions for fueling, divided into three sections: BEFORE FUELING, DURING FUELING, and AFTER FUELING. The background of the slide is a photograph of a marina dock with several boats moored and a person walking on the pier.

BEFORE FUELING:

1. STOP ALL ENGINES AND AUXILIARIES.
2. SHUT OFF ALL ELECTRICITY, OPEN FLAMES, AND HEAT SOURCES.
3. CHECK ALL BILGES FOR FUEL VAPORS.
4. EXTINGUISH ALL SMOKING MATERIALS.
5. CLOSE ACCESS FITTINGS AND OPENINGS THAT COULD ALLOW FUEL VAPORS TO ENTER ENCLOSED SPACES OF THE VESSEL.


DURING FUELING:

1. MAINTAIN NOZZLE CONTACT WITH FILL PIPE.
2. WIPE UP SPILLS IMMEDIATELY.
3. AVOID OVERFILLING.
4. FUEL FILLING NOZZLE MUST BE ATTENDED AT ALL TIMES.

AFTER FUELING:

1. INSPECT BILGES FOR LEAKAGE AND FUEL ODORS.
2. VENTILATE UNTIL ODORS ARE REMOVED.

Fuel Dock Attendant Training

- Hazardous Waste Training: 40 hour class
 - Department of Ecology spill response training
 - Fuel dispenser training by vendor
 - L&I required training for over-water fueling
 - Spill prevention, Control and Countermeasure Plan
 - Annual refresher training
- 
- The background of the slide is a photograph of a marina. A long, paved dock extends from the foreground into the water. On the left side of the dock, there are several fuel dispensers, including a prominent yellow one. In the distance, a person is walking along the dock. The water is calm, and several boats are moored at other docks in the background. The sky is overcast.

Design Status

- 90% design documents completed June 2014
- Permitting review in progress
- Estimated construction cost = \$1.9 million
- Total estimated project cost = \$2.5 million