*MEMO*

To: Carl Uchytil, Port Director April 24, 2013
Eric Schaal, P.E. Assist Port Engineer

From: Harold Moeser, P.E., Assist Port Engineer

Subject: NORTH DOUGLAS LAUNCH RAMP

You requested a look at what can we do to make improvements at the North Douglas Launch Ramp. This memo summarizes the issues found and moderate cost solutions suggested. These are not all encompassing nor do they necessarily provide ideal solutions. A formal public design process may stimulate more creative solutions for consideration.

We identified the following issues at North Douglas.

- Long narrow pavement section, trucks parking on road embankment, random parallel and angle parking.
- Overflow parking occurs on the highway shoulder and the scenic view lot to the east.
- No delineated lane guidance for traffic flow. This is exacerbated as daily use increases and parking consumes usable area.
- Ill defined set up lane before launch and tie down lane after retrieval.
- Ramp approach at the apron is curved. Final line up occurs on ramp requires a higher level of operator backing skills or longer delays in cycle time.
- The float is only available April through September.
- No mitigation of waves in higher wind conditions.
- Kayak activity on adjacent beach with buses and pedestrians crossing the approach apron.
- Some users have requested a BBQ pit for picnics, bench seating, area lighting.
- Portable toilets are provided.

WORK PRODUCTS AND ANALYSIS

Sheet designated L1 EXISTING WITH TRAFFIC AND PARKING DELINEATION

This scenario shows clear delineation of circulation and parking within the existing paved section could improve the flow through activity. It's not clear if it increases parking capacity by the change from random to directed availability. In addition, power is available on the other side of the highway so area lighting is possible.

Parking spaces provided: 25 total with 6 car only spaces.

This scenario does not address commercial Kayak use.

Sheet designated L2 MODEST EXPANSION WITH DESIGNATED TURNING AND PARKING

This scenario shows a modest expansion by widening seaward to provide more parking closer to the ramp and move the 60' turn around in closer proximity to the ramp. Area lighting and picnic platforms with tables and fire pits are shown on the perimeter. The actual expansion could occur with a retaining wall to contain the highway embankment, or a seaward retaining wall to minimize the fill foot print in that direction. Some clearing and brushing in the scenic view area with some additional pavement is also a low budget enhancement.

Parking spaces provided: 32 total with 8 car only spaces.

This scenario does not address commercial Kayak use.

Sheet designated NOAA CHART 17315

This describes the general location of the ramp within the context of Stephens Passage and Fritz Cove. The radials indicate generalized fetch distances used for preliminary wave analysis for the site.

Sheet designated BREAKWATER

This simple one line sketch only suggests the general lengths for a floating structure that provide some level of wave attenuation and remain floating. Rubble mound and wall type structures were assumed to be out of scope.

Discussion of criteria used:

The upland site for launch is approximately 30'-65' x240' irregular shaped area, (1/3 acres), for arrival, set up, launch, park, retrieve, tie-down and exit activity; combined with the adjacent scenic view, a total of approximately 3/4 acres are under pavement. The paved surface is 60-65' across that narrows to about 30' in front of the ramp. When crowded, longer rigs pulling off the highway making a right turn into the scenic view space then back down approximately 260' to the ramp apron, set up for launch, back down to launch and return up the ramp. If available the most efficient parking scenario is to take the first available space on the highway embankment. Typical about 13' of truck ride the embankment, and the trailer extends out on pavement about 29'-30'. When those spaces are full, shorter car/trailer rigs angle and parallel park seaside or further away in the scenic lot. Retrieval is simply backing down while turning to

line up with the ramp and then down the ramp. A great deal of competence or a lot of time back and forth is required to get it right.

General consensus among marina designers is that one lane can accommodate 50 launches and retrievals a daily, another consideration is that a well designed facility can launch or retrieve one boat every 10 minutes. At 6 operations per hour, that would be 72 in a 12 hour day.[2] Oregon design guidelines suggest 5 minutes per operation so the through put is doubled[3]. We don't have a count on launches per day or parking statistics.

For a single lane facility, parking for 15-45 vehicle/trailer spaces is standard. California guidelines[2] suggest 20-30 car/trailer spaces per ramp. We don't have a daily count of typical or design demand. There is a sense it not enough some days, but how many days are intolerable.

A vehicle trailer combination requires approximately a 60' turn around area, minimum drive lane widths of 20'-30'depend on parking angle, one way or two way traffic and whether or not drive through parking is an option. Wider lanes are required if drive through parking is not an option.

Parking spaces are 9' x 20' per auto, and 10' x 48' for vehicle with trailer. For handicap space a 5' wide gap between spaces is standard.

Ideally, once the vehicle and trailer has made the turn around, the ramp alignment is a straight back down. Without ramp realignment, that is not considered here.

Wind Wave Criteria

Wave height of course is understood to affect operational use and survivability. Waves should be less than 6" (crest to trough) for reasonable launch conditions. The wind speed of twenty five knots was selected as a GO or NO GO decision threshold for the launch activity. Every user may have much different thresholds. The current decision threshold for float removal is ideally September 30 through April 1, a few weeks either way often reality.

Experience for the site currently requires removal of floats at the end of summer, but not necessarily the end of boating season. The site is exposed to effective fetches of three and one half miles to the W, two miles to the NW and one point two mile to the N. An approximate wind-wave analysis for a sustained 25 knot[1] winds suggests significant wave heights of W 1.6', NW 1.2' , and N 1 ' respectively and highest 10% of waves to be 2, 1.6, and 1.2' respectively. Because of wind terrain effects, any easterly component of wind will affect this site as well. Currents can increase predicted wave heights and reduce wave lengths, or reduce wave height and increase wave lengths depending direction of influence. The site is also influenced by waves refracting around the end of Spuhn Island. These would have an even longer period

wave length (100+') wave lengths and some fraction of wave height experienced in the Stephens Passage fairway, not analyzed here because of the complexity of analysis. Wave length is significant for determining the effectiveness of floating breakwaters and breaking waves at the beach, [3] even low amplitude waves can create breaking waves on the ramp and adjacent beach.

Protection that would allow the float year around is not possible without a fixed structural barrier all around. In our opinion, no floating structure will make this a year around facility. Winds in the 45 knot range increase significant wave heights, $H_s$ to W 3.3', NW 2.6' N 2.0' and the highest 1% to 6.3', 4.8', and 3.8' respectively. Floating breakwater wave transmission coefficients approach unity as the wave period increases in these conditions. Unless the structure can protect at all tide levels, it cannot protect a float.

Two sections approximately 150' long are shown on the last sheet. The placement assumes floating at all tide ranges with a narrow entrance at extreme low tide from either direction by locating the shore ends in approximately -12' MLLW of water. It should be designed to reduce wind threshold wave to less than 6" and survive year around. Season placement is also possible. Log bundles or similar mass will likely improve conditions, but frequency and duration of extreme storm events in shoulder months cannot be predicted.



*References and notes:*


1 *Launch threshold prevailing wind, not a design value for extreme event.*
2 *California Department of Boating and Waterways, Boating Facilities Division, Layout, Design and Construction Handbook for Small Craft Boat Launching Facilities, March 1991*
3 *Tobiasson PE, Kollmeyer,Ph.D. Marinas and Small Craft Harbors, Second Edition*
4 *Oregon Boating and Facilities Design Guidelines*