Port of Alaska Modernization Project

MUNICIPALITY OF ANCHORAGE

ASSEMBLY ENTERPRISE AND UTILITY
OVERSIGHT COMMITTEE

Special Meeting
February 20, 2019, 2:30pm – 5:00pm
Assembly Chambers Loussac Library
3600 Denali, Room 108

Port of Alaska Modernization Project: “…how to build the most cost effective port that can meet our needs as swiftly as possible.”
(Assembly Member Constant, Committee Co-Chair)
Jim Campbell, PE, President, PND Engineers, Inc.
Dempsey Thieman, PE, SE, Sr. Vice President

- PND is an Alaska engineering company, employing 100 staff.
- PND has provided engineering design for all of Alaska’s container ports, in Anchorage, Kodiak, and Dutch Harbor (UMC and APL).
- Designer of the OPEN CELL™ wall system used in the original 2006-2012 Port Intermodal Expansion Project.
- Our 2006 design was sound. Construction failures were the true problem.
- We are knowledgeable about many of the technical concerns at the Port, but have not been part of any discussions or planning since about 2012.

- Reduce dredging by moving the face out 400 feet - “self cleaning”
- Create valuable new uplands
- Avoids or eliminates conflicts with existing terminals during construction of new facilities
- Improved operations with full access and back reach to/from wharf
- Deep draft for new larger ships
- Reduce corrosion problems
- Mitigate sedimentation problem in tidal zones and seismic instability
Cost Effective Alternative for the Port

Option 1 – Minimal Concept

- 31± Acres Uplands to remain in PND Plan
  (20± Acres removed under current plan)
- New sheet bulkhead at gap and cement stabilization along bulkhead face
- Existing bulkhead to remain
- New armor rock slope
- New 950' x 115' pile supported dock & crane rail 100' gauge
Cost Effective Alternative for the Port

TERMINAL 1 DOCK AND CRANE SECTION
Repair Options
Marginal Wharf in Front

PND made this slide in 2012!
Cost Effective Alternative for the Port

Option 2 – Minimal Concept w/ Ro-Ro Trestles

31± ACRES UPLANDS TO REMAIN IN PND PLAN
(20± ACRES REMOVED UNDER CURRENT PLAN)

NEW SHEET BULKHEAD AT GAPS AND CEMENT STABILIZATION ALONG BULKHEAD FACE, TYP.

NEW ACCESS TRESTLES AND DOLPHINS FOR RO/RO (MATCH TOTE PORT OF TACOMA GEOMETRY)

NEW 950' x 115' PILE SUPPORTED DOCK & CRANE RAIL 100' GAUGE

BARGE BERTH

EXISTING BULKHEAD TO REMAIN

NEW ARMOR ROCK SLOPE
Cost Effective Alternative for the Port

Option 3 – Full Build T1 and T2

31± ACRES UPLAND TO REMAIN IN PND PLAN
(20± ACRES REMOVED UNDER CURRENT PLAN)

NEW SHEET BULKHEAD AT GAPS AND CEMENT STABILIZATION ALONG BULKHEAD FACE, TYP

EXISTING BARGE BERTH

EXISTING BULKHEAD TO REMAIN, TYP

NEW ARMOR ROCK SLOPE

NEW 850’ X 60’ PILE SUPPORTED DOCK WITH ACCESS TRESTLES

NEW 950’ X 115’ PILE SUPPORTED DOCK & CRANE RAIL 100’ GAUGE
Kodiak Pier 3
- Completed in 2016 for $35 million
- 420 feet of new pier face, OPEN CELL backwall, 100-ft crane gauge
- High seismic, deep draft, same Matson ships that call on Anchorage
Unalaska Marine Center – Dock Position 3 and 4 Replacement

- Completed in 2019 for $35 million
- 714 feet of new dock face, OPEN CELL bulkhead, 50-ft crane gauge
- High seismic, deep draft, same Matson ships that call on Anchorage
## Port of Alaska Modernization Project

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Current PAMP Plan</th>
<th>PND Option 1 Minimal Concept</th>
<th>PND Option 2 Minimal Concept w/RO-RO Trestles</th>
<th>PND Option 3 Full Build T1 and T2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Petroleum &amp; Cement Terminal (PCT) &amp; South Backlands Stabilization (SBS)</td>
<td>$240,000,000</td>
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<td>2 Landside Buildings (LSB)</td>
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<tr>
<td>3 North Extension Stabilization (NES Step 1 and Step 2)</td>
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<td>4 Terminal 1 (Matson)</td>
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<td>5 Terminal 2 (Tote)</td>
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<td>6 Petroleum Terminal (PT)</td>
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<td>7 Terminal 3 Demolition</td>
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<tr>
<td>8 North Terminal 1 (N1)</td>
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<td>$186,000,000</td>
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<td>9 North Terminal 2 (N2)</td>
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<td>$64,000,000</td>
<td>$115,000,000</td>
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<td><strong>Total</strong></td>
<td><strong>$1,928,000,000</strong></td>
<td><strong>$186,000,000</strong></td>
<td><strong>$250,000,000</strong></td>
<td><strong>$301,000,000</strong></td>
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</table>
WHY DOES THE CURRENT PLAN COST SO MUCH?

- Inefficient sequencing required to avoid conflicts and keep operations going during construction
- Unnecessary demolition
- Excessive design criteria (seismic, loads, life expectancy)
- Long approach trestles to proposed Terminals 1 and 2
- Significant dredging quantities
Why does it cost so much?

North Extension Demolition

$253 million
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WHY ARE PND COSTS SO MUCH LESS?

- No dredging required
- Almost no demolition required
- Can construct PCT and repair/replace POL later, when funds become available
- Maximizes use of existing facilities (reuse existing infrastructure)
- Can use existing T1-T3 for cruise and light duty vessels
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TECHNICAL CONCERNS WITH CURRENT DESIGN

- Inefficient sequencing required
- Corrosion issues and the cost to address them
- Dredging issues (maintenance)
- Less efficient design for operations (no back reach)
- Siltation (liquefiable, seismically unstable)
CORROSION

- Iron oxidizing microbes - typically occurs between MLLW and -8’ MLLW
- The rate of this corrosion is much greater than that of “general” corrosion

“One of the beneficial aspects of the retained fill concept for the Port Expansion Project is that there is no impact from this sedimentation or deposition.” (R&M 2009)
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West Construction Letter Regarding Constructability of PND Design

“I believe that the failures at the Port of Anchorage were the result of inexperienced contractors and project managers, and were not related to the design of the facility.”

“I also firmly believe that the facility can be constructed as originally designed if it is constructed by an experienced contractor and overseen by a competent project manager…”

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Thank You