

Memorandum for Record

Subject: Inspection of Wainwright Lagoon Boat Launch

1. Purpose of visit and general information:

On 31 August 2010, Robert Tedrick from the U.S. Army Corps of Engineers Alaska District inspected the Wainwright Lagoon Boat Launch recently built in Wainwright, AK, see Photo 1. The construction contract was administered by the North Slope Borough (NSB). The inspection is a task under the Alaska District's Uniform Project Code (UPC) AKV273 Construction Inspection Services Award 336-07 for the Denali Commission. The primary purpose of the inspection was to verify that construction was completed in accordance with the contract drawings and specifications. In addition, a few items not directly related to contract compliance have been noted. As-built drawings were not available for the inspection. The contract documents were prepared by LCMF, LLC. Mr. Daniel A. Reynolds, CE-11146, stamped the construction documents in May of 2008. Mr. Michael Brinkmeyer, Project Administrator for the NSB was my point of contact. Mr. Brinkmeyer met me in Barrow, Alaska and accompanied me on the inspection. The weather during the inspection was overcast with a light breeze. The temperature was about 40 to 45° F. I began my inspection at about 2:10 p.m. and concluded at about 3:20 p.m.

2. Notable Construction History:

The scope of this project was to replace the deteriorated existing launch ramp that existed at virtually the same site, see Photo 3. Mayor Oktollik placed the construction of the old launch ramp in the 1980's. The construction of this replacement project was originally completed in the fall of 2009; however the launch ramp was placed too high on the shoreline and did not extend far enough into the waters of Wainwright Lagoon. The project was reconstructed during the spring/summer of 2010. I did not find any issues that relate to or are a result of the reconstruction of this project.

3. Points of Contact in Wainwright:

I spoke with the following individuals during the course of my inspection:

Enoch Oktollik – Mayor of Wainwright
Ben – Search & Rescue in Wainwright
Edwin – Wainwright Public Works

4. Contract Related Findings:

The overall condition of the project is very good with only a few minor deficiencies noted from the contract drawings. The type of construction essentially duplicates the

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launch ramp that was being replaced. The primary difference being that chains and bolts (see Photo 3) are used in the new construction rather than cables and cable clamps (see Photo 4) to secure the precast concrete ramp blocks. Construction and condition of all major elements of the project were deemed to be sound. The following deficiencies were noted:

a. Bolt missing at one precast concrete block connection:

At one location in the launch ramp the connecting chains were not fastened together, see Photo 5. These connections are the key in allowing the mat of individual concrete blocks to act as a unit. The presence of spalling at an adjacent connection as well as a bent connecting bolt may be an indication of excessive “tightness” of the connecting chains in this vicinity. (I do not consider the bolt being bent to be a detriment to the performance of the system.) Recommend that the missing connection be repaired. The repair should accomplish a relatively tight connection in all four affected chains. A slightly longer repair link could be substituted for one of the end links in the connection and allow proper fit-up.

b. Missing double nuts on connecting bolts:

During my inspection looked at all of the connecting bolts and I counted approximately ten bolted connections where the specified double nut was not present, see Photo 6. Recommend that all connections receive a double nut as specified. In most instances this merely requires installing and tightening the additional nut against the existing nut. At some locations a longer bolt may be needed as the available chain length may not be sufficient to tighten the connection enough to provide the extra threads for the second nut. In a few of the locations without a double nut, a nut was found adjacent to the connection, lying on the filter fabric. Please see the following comment regarding loose double nuts.

c. Loose second nut at double nut connections:

I found that some of the second nuts in the double nut connections were loose enough to be removed by hand (see Photo 7). The looseness of some of the double nuts and the presence of some “extra” nuts adjacent to missing double nuts suggests that some of the loose double nuts have been coming off. I recommend that all connections be checked and all loose connections be tightened.

d. Double nut not fully engaged in bolt threads:

In several locations I found that the length of available threads was insufficient to allow the double nut to be fully threaded onto the bolt (see Photo 8). Without tools I was unable to determine if this was caused by too short of bolt, or just that the first nut was not run down enough on the bolt. I suspect that longer bolts may be required to correct this in most locations. This is a minor issue, but I recommend that all double nuts be installed with at least half of their threads engaged. This is based on

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the assumption that a half-nut, or jamb nut, would have sufficed to lock the connection. The resulting “cup” will hold water and accelerate corrosion. Use of a jamb nut would be a better solution in lieu of providing a longer bolt.

e. Spalled concrete corners on precast blocks:

During my inspection I noted that several of the precast concrete blocks have spalled corners where the connecting chains come out of the blocks (see Photo 9 and Photo 10). As the ramp has been in service for some time, I could not determine if this is normal wear-and-tear, or if this was the condition when the ramp was completed. This condition should be monitored, and if these blocks continue to deteriorate more rapidly than the remainder of the blocks, then replacement should be considered.

5. Non-contract related findings:

a. Displaced anchor block near water’s edge on northeast side:

One of the precast concrete anchor blocks along the edges of the ramp was noted to be displaced (see Photo 11 and Photo 12). Recommend that this anchor block be repositioned to its originally required position.

b. Restriction on ramp use by heavy equipment:

It is appropriate to restrict the use of the ramp and a temporary sign has been provided (see Photo 13). Recommend that a permanent sign be provided and installed.

6. Comments from residents of Wainwright:

a. Water at new ramp too shallow for all Search & Rescue operations:

Ben stated that the new ramp is not fully functional for launching the 24’ Boston Whaler Search & Rescue boat. He indicated that during times of low water there is a shoal out beyond the end of the ramp that is shallower than the depth at the end of the ramp. Deep water between the end of the ramp and this shoal prohibits launching on the other side of the shoal. Ben stated that the old ramp alignment was better for getting this large Search and Rescue boat into the water.

It may be possible to do a small amount of dredging that would help with this issue. Water depths would have to be determined to verify the validity of this possible solution.

b. Old ramp blocks left in water are a navigation hazard:

Both Edwin and Ben mentioned that some of the concrete blocks from the old launch ramp were left in the water near the new ramp. Prop damage was reported as a result of this.

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I recommend that measures be taken to remove these navigation hazards.

7. Field notes taken during my inspection are included below, see Figure 1. Many additional photos and a few short video clips are available by contacting the undersigned.
8. For additional information please contact Robert Tedrick (phone 907-753-5745, email Robert.C.Tedrick@usace.army.mil).

Respectfully,



Robert C. Tedrick, P.E.
Structural Engineer
CEPOA-EN-CW-HH

Enclosures: 13 Photos
Field Notes

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Photo 1: General view of boat launch ramp looking south-southwest.



Remains of
old Ramp

Photo 2: New launch ramp and adjacent remains of old ramp.

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Photo 3: General view of launch ramp construction – note chains & bolts.



Photo 4: Corroded connecting cables with clamp in old ramp construction.

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Photo 5: Missing connection bolt and spalled adjacent connection with bent bolt.



Photo 6: Connecting bolt without specified double nut.

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Photo 7 : Double nut connection before and after loosening second nut by hand.



Photo 8: Double nut not fully engaged with bolt threads.

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Photo 9: Several spalled corners on precast concrete blocks.



Photo 10: Close-up of spalled corner showing crack in concrete.

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Photo 11: Displaced anchor block near water's edge.



Photo 12: Close-up of displaced anchor block.



Photo 13: Temporary sign prohibiting use by heavy equipment.



Figure 1: Inspection Field Notes