

#### Education

M.S., Civil Engineering, 1985  
*University of Washington*

B.S., Civil Engineering, 1983  
*University of Washington*

#### Registration

Professional Engineer, Civil:  
*Washington, 1993 (#30258)*

#### Professional Affiliations

CHI EPSILON, National Civil Engineering Honor Society  
Society of American Military Engineers (SAME)

# Jeffrey Juel, PE

## Owner - Juel Tide Gates

### Professional Summary

Jeffrey Juel's experience with tide gates dates back to 1995 when he designed a unique side-hinged fish friendly flap gate that was installed at four sites in Aberdeen Washington. Since and including the Aberdeen project, he has been involved in the design, fabrication, installation and/or retrofitting of fish-friendly tide gates at more than 10 sites in Washington State. He has a provisional patent application in effect for a revolutionary side-hinged variable backflow tide gate that has been retrofitted to installations of his original design at six locations.

In addition to his tide gate expertise, Mr. Juel has over 25 years of experience in the design of large civil works and military projects in the areas of navigation, coastal engineering, flood control, road, site and military construction including planning, design and construction management, and quality control.

Prior to starting his own company - Juel Tide Gates - on August 2 2008, Mr. Juel worked for INCA Engineers in Bellevue WA beginning August 2000, Prior to INCA, he worked with the Seattle District, U.S. Army Corps of Engineers in the Military Project Management Branch, Construction Division, Planning Branch, and the Civil Design Section. For two years he was responsible for the Seattle District's CADD system and served on the Corps' Nation-wide CADD steering committee.

### Experience

#### **Fornsby Creek - Control Tide Gate; Skagit System Cooperative; LaConner, WA**

Retrofitted a top-hinged fiberglass flap gate with rigging and a tension regulator. The tide gate now allows some backflow during the flood tide. An upstream inundation level is selected and the rigging is then set so that the flap gate closes reliably when the water level reaches the desired elevation. It has been working since January 2010.

#### **Edison Slough Tide Gate; Skagit County; Edison, WA**

Designed, fabricated and installed a galvanized steel strut and rigging with a tension regulator for a retrofit / conversion of a side-hinged flap gate at Edison Slough. The original installation (by Golden Harvest) did not allow any backflow. Since the installation of the new retrofitted control mechanism, the gate opens 80-90 degrees from the head wall in slack water and allows backflow. The amount of backflow allowed by the tide gate is infinitely adjustable and can be set to allow no backflow or it can close when the water level upstream reaches a prescribed desired elevation. It has been working since January 2009.



**Cherry Valley Pump Station and Flap Gate; Drainage District #7; Snoqualmie Valley, WA**

I retrofitted a side-hinged flap gate with rigging and a tension regulator. This flap gate is not in an area subject to tidal effects. The flap gate is wide open in still water and allows some backflow when the Snoqualmie River is rising. During back flow, when the draft force acting on the flap gate is sufficient, the flap gate closes. When the river level drops and the seating head is zero, the flap gate pops wide open.

**North Fornsby Creek Tide Gate; Skagit System Cooperative; LaConner, WA**

Retrofitted an existing side-hinged flap gate with rigging and a tension regulator. The tide gate presently opens wide in still water and allows backflow filling the creek upstream to a desired water level on flood tides.

**Fornsby Creek Tide Gate; Skagit System Cooperative; LaConner, WA**

Reviewed the completed design drawings, responded to review questions, and assisted with the installation of precast concrete box culvert sections, headwall, and a side-hinged tide gate.

**Port Stanley Salt Lagoon Tide Gate; San Juan County; Lopez Island, WA**

Retrofitted a side-hinged flap gate adding rigging and a tension regulator. The tide gate presently opens wide in still water and allows backflow filling the upstream lagoon to a desired water level on flood tides.

Before Juel Tide Gates:

**Chinook River Tide Gate; Quigg Brothers, Inc.; Aberdeen, WA**

Designed stainless steel fabrication for attaching a large combination sluice gate / flap gate (provided by Golden Harvest) to the existing box culverts at a tide gate structure on the Chinook River. Developed fabrication drawings and provided assistance during field installation.

**Electron Dam Rock Chute; Puget Sound Energy; Electron Dam, WA**

Coordinated completion of design for a reinforced concrete flume or “rock chute” for the Electron Dam flume headworks.

**Lummi Aquaculture Pond Tide Gate Study (2006)**

Jeff worked with Pacific Hydraulic Engineers, performing a preliminary design and cost estimate for replacing several flow control tide gate structures associated with the 750 acre Lummi Sea Pond. The client was the Lummi Nation.

**Three Mile Falls Dam Adult Ladder Detector; Oregon State Department of Fish & Wildlife**

Project Manager in charge of design for modifications of an existing fish ladder to allow installation of antennas for a PIT tag detection system. The work included design of steel and glass-fiber reinforced concrete weirs, fiberglass antenna guides, and overall antenna geometry.

**Cherry Valley Flood Control Structure Self-Regulating Gate; Drainage District #7, Snoqualmie Valley, WA**

Project Manager/Civil Engineer for the design, fabrication, and support during construction of a self-regulating tide gate retrofitted on an existing pump station. The pump station structure controls



drainage from agricultural land near Duvall, Washington. The tide gate allows fish to freely bypass the pump station at all times except during high creek levels. Partners for this project also included Washington Department of Fish and Wildlife, National Marine Fisheries, King Conservation District, and Washington Trout.

**Prosser Dam Pit Tag Design/Build; Yakima Nation, Toppenish, WA**

Lead Designer for design/build project entailing fish ladder modifications for a PIT tag detection system.

**Bonneville Power Administration McNary Dam Oregon Fish Ladder PIT Tag; USACE, Walla Walla District**

Project Manager and Lead Designer for modifications to the fish counting house section of the existing fish ladder at McNary Dam. These modifications accommodated the installation of PIT tag antennas at two locations.

**Bonneville Second Powerhouse Pit Tag Antenna Prototype; USACE, Portland District**

Lead Designer for the civil site work for test installation of a prototype antenna for PIT tag detection in the Bonneville Dam Corner Collector Juvenile Bypass System. Produced construction plans and specifications for the sitework, as well as details for the antenna fabrication. Converted solid model of PIT tag antenna to contract drawings.

**Ice Harbor and Lower Granite Dam Adult Pit Tag; USACE, Walla Walla District**

Project Manager and Civil Engineer for production of plans and specifications for installation of PIT tag detection systems at fish ladders at Ice Harbor and Lower Granite Dam. Developed concept for a precast concrete retrofit system that could be installed during the short construction window. Produced contract drawings, including a 3-dimensional perspective of the work. This project was a finalist on the 2002 SAME Design Excellence Competition and INCA received a letter of commendation from the client for this project.

**McNary Pit Tag Modifications; USACE, Walla Walla District**

Project Manager/Civil Designer for production of plans and specifications for installation of two electronics buildings, transceiver cabinets, and pit tag antennas on 16 weirs at the Washington Ladder and Oregon Fish Ladders.

**Howard Hanson Dam Physical Model Studies for Downstream Fish Passage Facility; USACE, Seattle District, WA**

Project Engineer for physical modeling performed by ENSR. ENSR provided a study aimed at predesign optimization of a fish bypass dewatering screen, and the optional constructing, testing and documenting the results of physical hydraulic model tests to assist in the design of a downstream fish passage facility at Howard Hansen Dam.

Before INCA

**Program Manager for McChord AFB with the Military Project Management Branch**

As a Program Manager with the Military Project Management Branch, Jeff represented the U.S. Army Corps of Engineers in the design and construction of a number of buildings and related infrastructure at McChord AFB. The majority of this construction supported the new Boeing/McDonnell-Douglas C-17 transport planes. Projects included barracks, hangars, a machine



shop, expanded aprons, a new hydrant fueling system, administration buildings, a medical clinic, temporary lodging facility, and a golf course club house. The combined contract amounts for the FY99 construction contracts at McChord AFB exceeded \$65 million dollars. Jeff managed design and construction budgets and served as the primary point of contact between the Corps and the Air Force on issues and project status from preliminary project scoping through completion of construction, as well as commissioning and warranty repairs. Jeff provided oversight of the District's design project managers coordinating District resources to execute designs and resolve issues. Successful execution of this program was instrumental in the Seattle District USACE being named Air Mobility Command Agent of the Year, Construction Category in 1999.

### **Project Engineer for McChord AFB with Construction Division**

Prior to being selected to be the Program Manager for McChord AFB, Jeff served as a Project Engineer in the Construction Division of the Seattle Corps. Jeff represented the government for a variety of military construction projects including remodeling of existing buildings and construction of several new buildings including: two hangar remodels; a troop and equipment staging terminal; a maintenance training facility, an addition to the flight simulator complex; and an engine storage building. Contracts also included construction of a revised hydrant fueling system and new infrastructure including roads, steamlines, water, sanitary sewer, storm sewer, gas, electrical and telecommunications. Total contract amounts for which he had oversight as a Project Engineer exceeded \$50 million dollars.

### **South Aberdeen & Cosmopolis Flood Control Project (completed 1995)**

This \$6.4 million construction contract included a wide variety of construction activities including earthwork, steel and concrete tide gate structures, steel sheet pile flood wall, asphalt paving, drainage improvements, metal building construction, wetland mitigation and landscaping. Construction activities were coordinated with the contractor, cities of Aberdeen and Cosmopolis, Weyerhaeuser, Union Pacific RR, Burlington Northern RR and the Department of Fish and Wildlife. This project was completed ahead of on schedule, with no lost time accidents and with net contract modifications of \$150,000 (2.3% of the original contract amount). The unique tide gates constructed under this project proved to be very reliable. The tide gates have been featured in several Corps' publications and have appeared on the cover of the Seattle District's Annual Report.

### **South Aberdeen and Cosmopolis Flood Control Project**

Lead designer coordinated with other design disciplines to provide design and analysis for production of plans and specifications. Developed an innovative design for an environmentally-friendly tide gate system that allows for tidal flushing of streams and sloughs which cross the levee. These tide gates only close when necessary to prevent flooding. Refinements to the feasibility level design significantly reduced the government cost estimate for the project. The authorized budget for this project (based on the feasibility level design) as listed in the 1986 Water Resources Development Act was \$22.4 million with a maximum project cost of \$28.3 million. The final project cost was approximately \$11.2 million of which \$6.4 million was construction costs.

## Awards

Annual Pinnacle Achievement Award, 2003, INCA Engineers, Inc. -- Ice Harbor and lower Granite Dam Adult Pit Tag



**Juel Tide Gates**  
fish love my tide gates!

Annual Pinnacle Achievement Award, 2002, INCA Engineers, Inc. -- Howard Hanson Dam  
Juvenile Fish Passage Facility  
Air Mobility Command, Construction Agent of the Year – Team Award, 1999  
Letters of thanks from Lt. General Ballard (Commander USACE), Lt. General Robertson  
(Commander USAF Fifteenth Air Force - Air Mobility Command), & BG Griffin (Commander NW  
Division USACE) along with an On the Spot Award for completing a critical McChord AFB fuel  
hydrant project, 1998  
Seattle District USACE Engineer of the Year, 1997  
USACE BRAVO Awards in 1998, 1996  
Special Act Award 1993 (awards from coworkers)  
Nominee for 1993 Seattle District USACE Engineer of the Year

Official Commendations:

1985 (for outstanding performance)  
88 (for redesigning the Aberdeen Cosmopolis drainage control structures)  
91 & 92 (for highly successful performance)  
93 (for excellent performance)  
94 (for highly successful performance)  
1995 (for outstanding teamwork in preparing plans & specs)

Outstanding On-the-Job Trainer, 1990 (for training CAD users)  
Honorary Award, 1989  
CADD Production Award, 1987  
New Employee of the Year, 1985

## Additional Training

It's Not What We Say"; BCC, May 2007  
Project Management Fundamentals; BCC; March 2007  
USACE Security Engineering Training Course, May 2002

## Previous Employment

INCA Engineers ~ 7/24/00 – 8/01/08  
Senior Project Manager, Transportation Section 4/10/07 – 8/01/08  
Senior Project Manager, Structures Section 7/24/00 – 4/10/07  
Seattle District USACE ~ 7/84 – 7/24/00  
Program Manager, Military Project Management Branch ~ 8/98 – 7/24/00  
Project Engineer, Construction Division ~ 4/97 – 8/98  
Project Engineer/Quality Assurance Representative ~ 3/98 – 4/97  
Design Branch ~ Civil Design Section 1991 – 3/95  
Chief of CADD Support Section ~ 1988 - 1991  
Planning Branch ~ 7/84 – 1988

