John Day Adult Ladder PIT Tag Antenna Concept

5/28/2013

Preface

Below are conceptual drawings of permanent PIT tag antenna installations for both ladders at John Day. The goal of the concept is a low cost system that requires minimal concrete removal, does not change ladder hydraulics and detects tags at near 100% efficiency.

The proposed antennas will follow the same thin wall ferrite tile design that was successfully deployed at The Dalles counting windows. These antennas can be as little as 2.125 inches thick and have detection capabilities that equal or exceed standard body antennas. The ferrite tile design also insulates the antennas from the negative effects of surrounding metal, including rebar.

The inside contours of the antennas will recreate all existing concrete contours.

The concrete cuts will provide rectangular channels that the antennas will be bolted into. In cases where the existing contours are to be recreated by the antennas, varying amounts of concrete will be removed. The floor and sidewall channels will not require more than 2.125 inches of concrete to be removed.

Counting Windows Excluded

Examination of the areas within and near the count stations in both the south and north fish ladders show little promise for a simple PIT tag system installation. Both count stations are fabricated with no suitable concrete areas on which to securely attach PIT tag antennas. Extending the counting window slots would require extensive remodeling and would result in changes to hydraulics.

South Ladder Slots

The slotted weirs without flow control are top candidates for a place to add PIT tag detection.

- Very little concrete would need to be removed.
- Hydraulics would be almost completely unchanged.
    - The antennas would recreate the existing contours of the slots and orifices in which they would be installed.
    - The only disruption to hydraulics would be a 1” conduit for the antenna cable to the orifice antennas.
        - The conduit could be embedded in the concrete if deemed a hydraulic or fish passage disruption.

North Ladder Slots and Overflow Weirs

The most downstream slotted weir (without flow control) is a top candidate for a place to add PIT tag detection. Since only one of the slotted non-flow control weirs is available, one overflow weir will be necessary.

- Very little concrete would need to be removed.
- Hydraulics would be almost completely unchanged.
    - The antennas would recreate the existing contours of the slots, overflows weirs and orifices in which they would be installed.
    - The only disruption to hydraulics would be a 1” conduit for the antenna cable to the orifice antennas.
        - The conduit could be embedded in the concrete if deemed a hydraulic or fish passage disruption.

Proposed Locations

Figure 1 John Day North Fish Ladder Proposed PIT Tag Antenna Locations

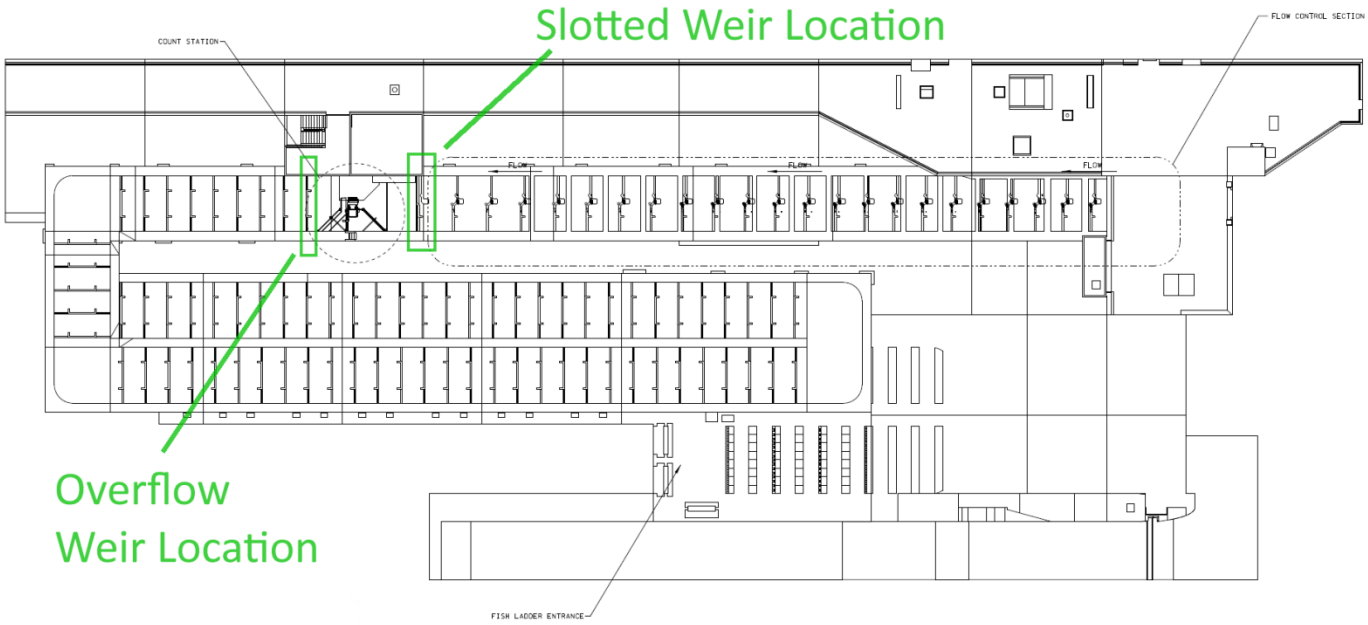
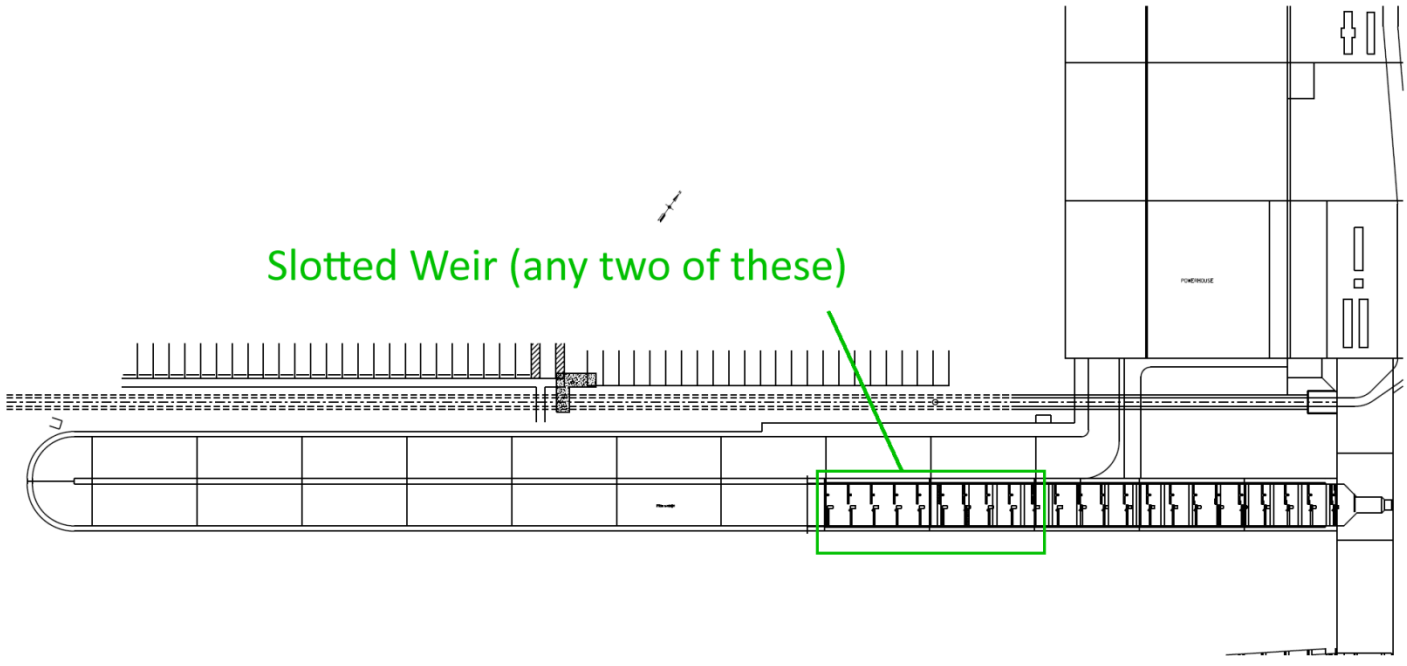


Figure 2 John Day South Fish Ladder Proposed PIT Tag Antenna Locations



North Ladder Slotted Weir

Figure 3 John Day North Slotted Weir With PIT Tag Antennas (looking upstream)

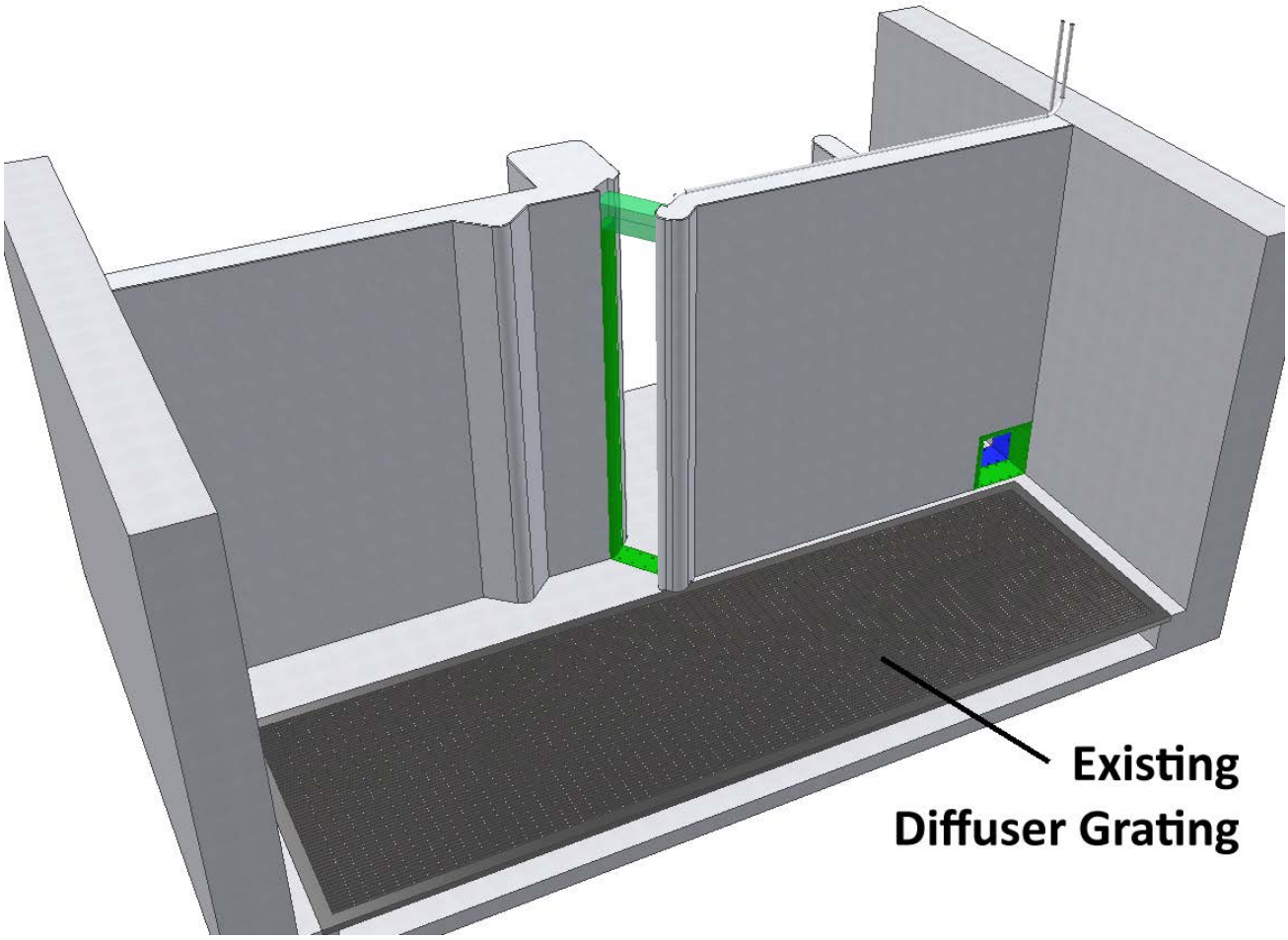


Figure 4 John Day North Slotted Weir Orifice Antenna (looking downstream)

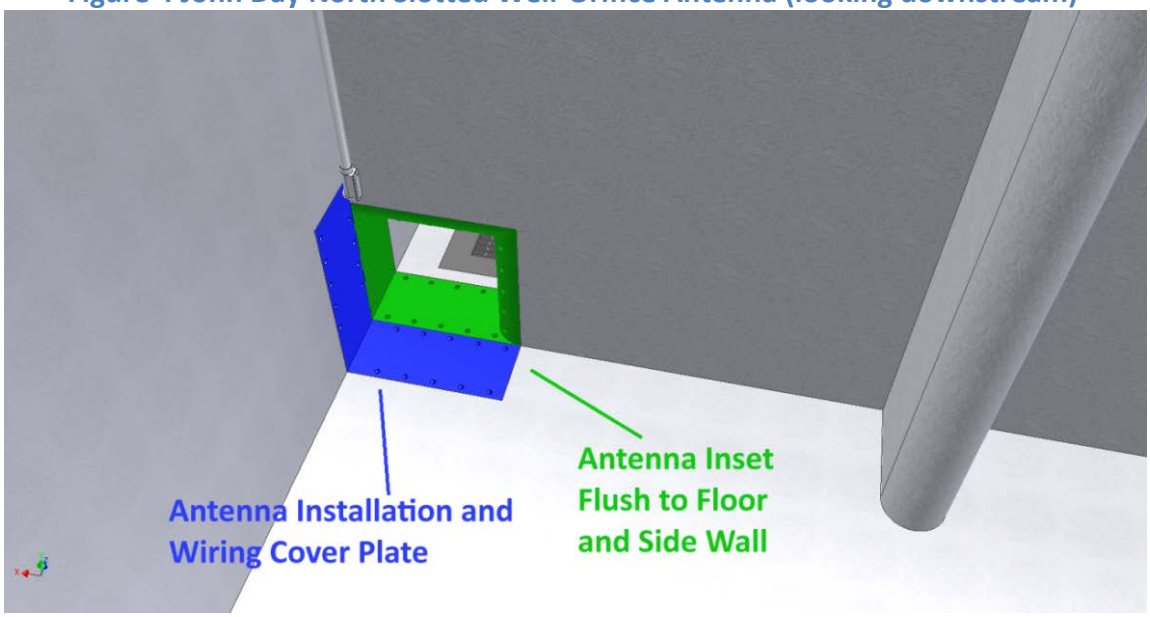


Figure 5 John Day North Slot Antenna (top is shown translucent)

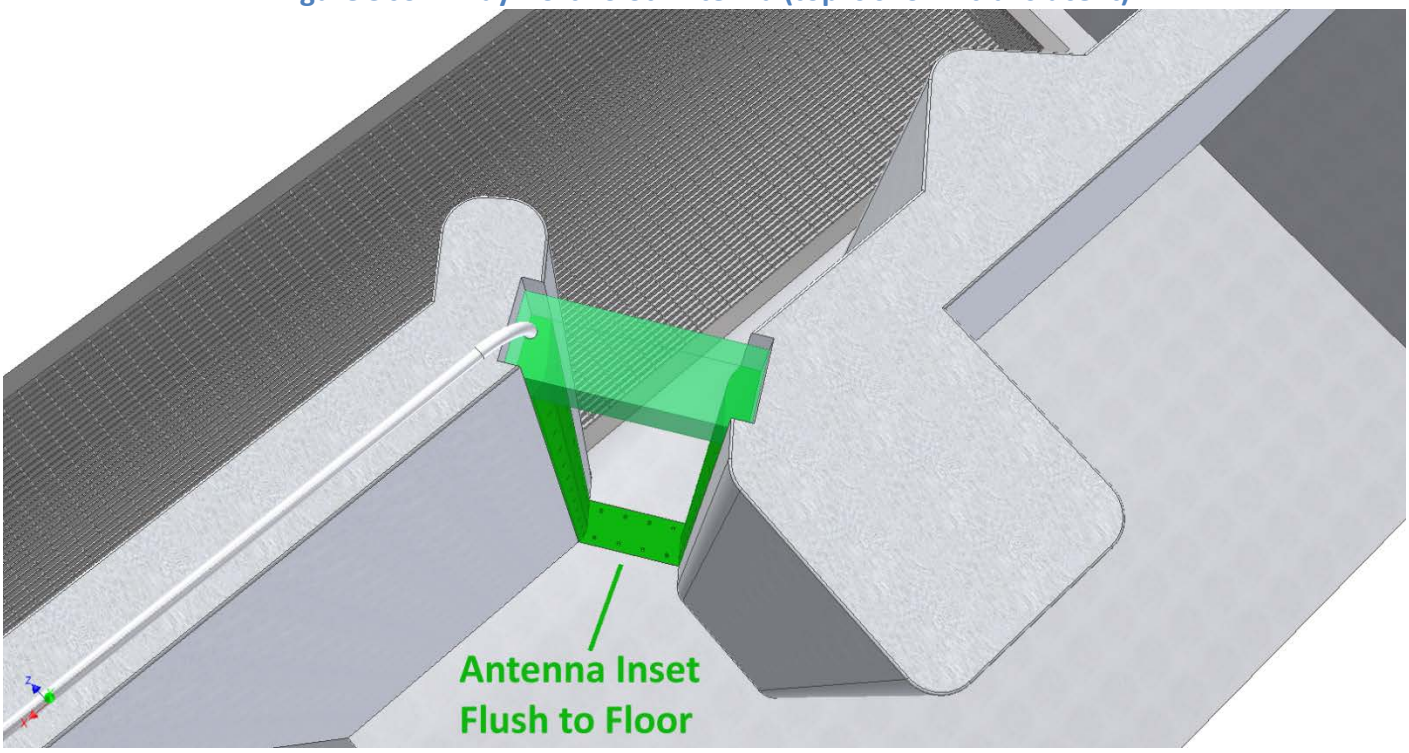
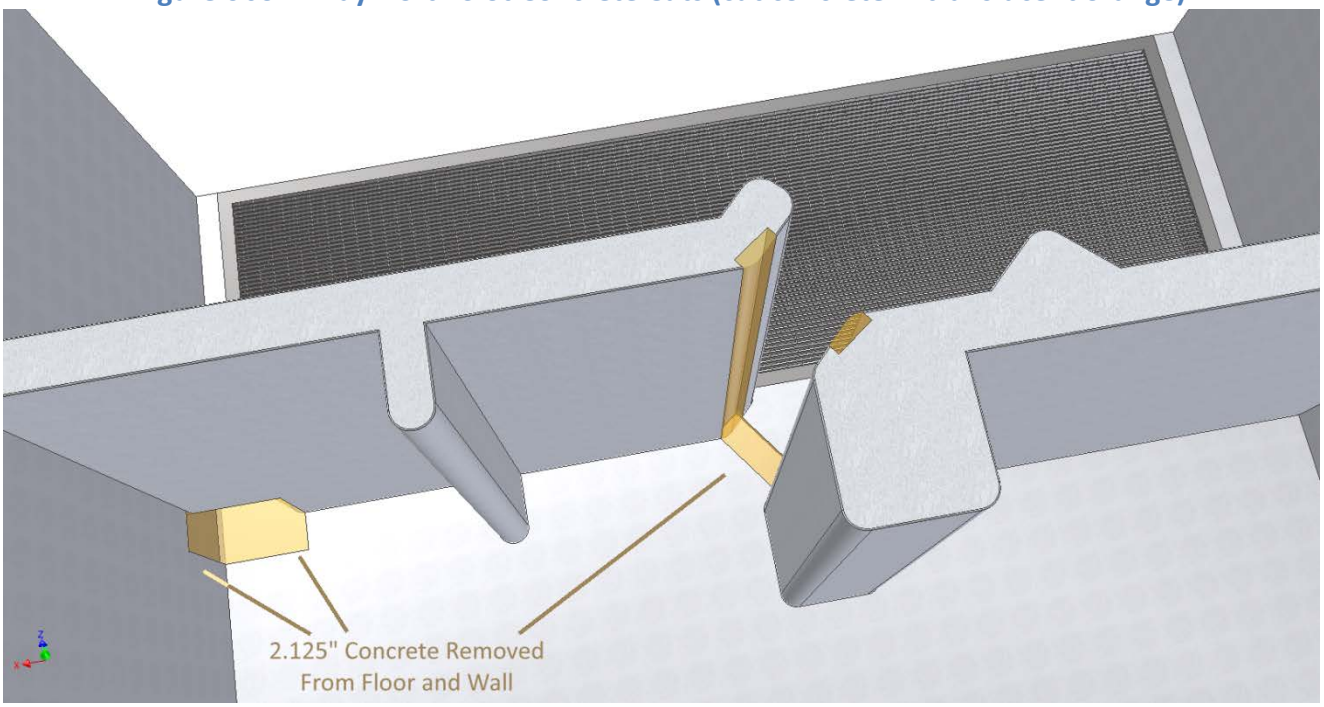


Figure 6 John Day North Slot Concrete Cuts (cut concrete in translucent orange)



North Ladder Overflow Weir

Figure 7 John Day North Overflow Weir With PIT Tag Antennas (looking upstream)

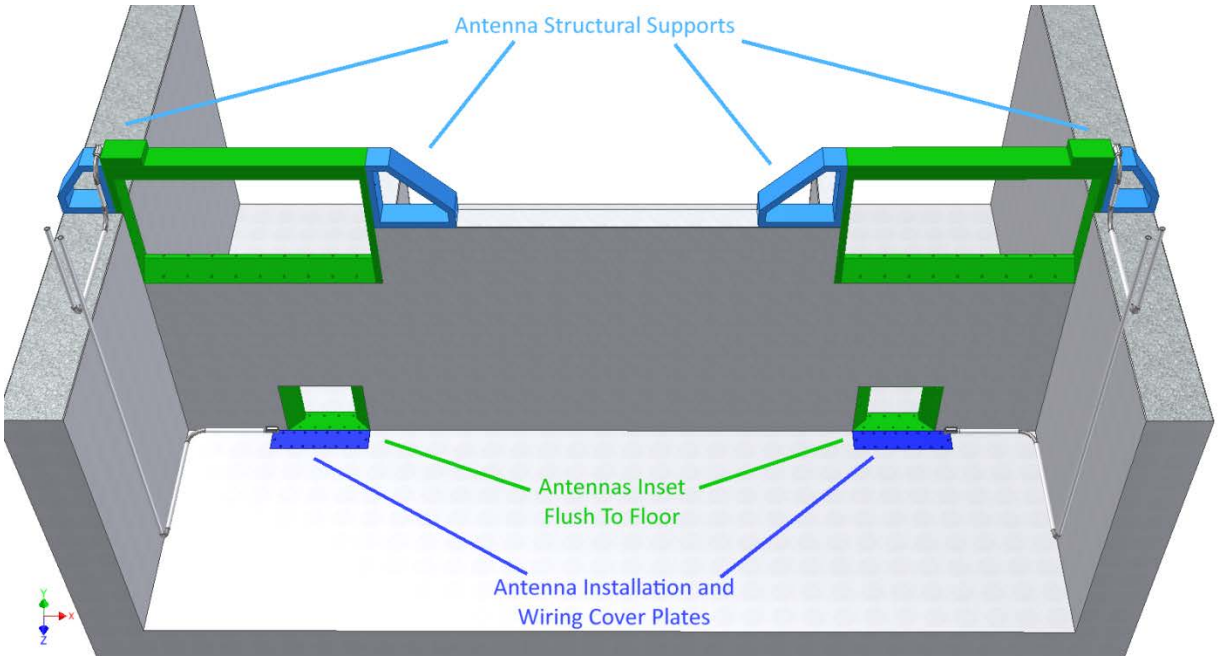
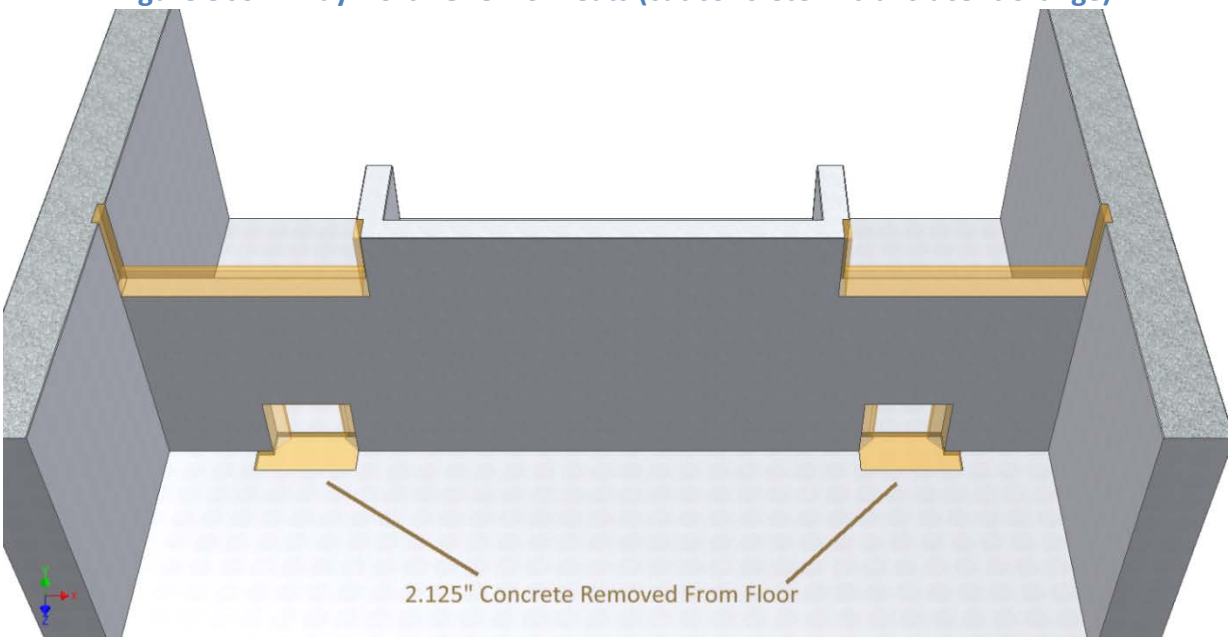


Figure 8 John Day North Overflow Cuts (cut concrete in translucent orange)



South Ladder Slotted Weirs

Figure 9 John Day South Slotted Weir With PIT Tag Antennas

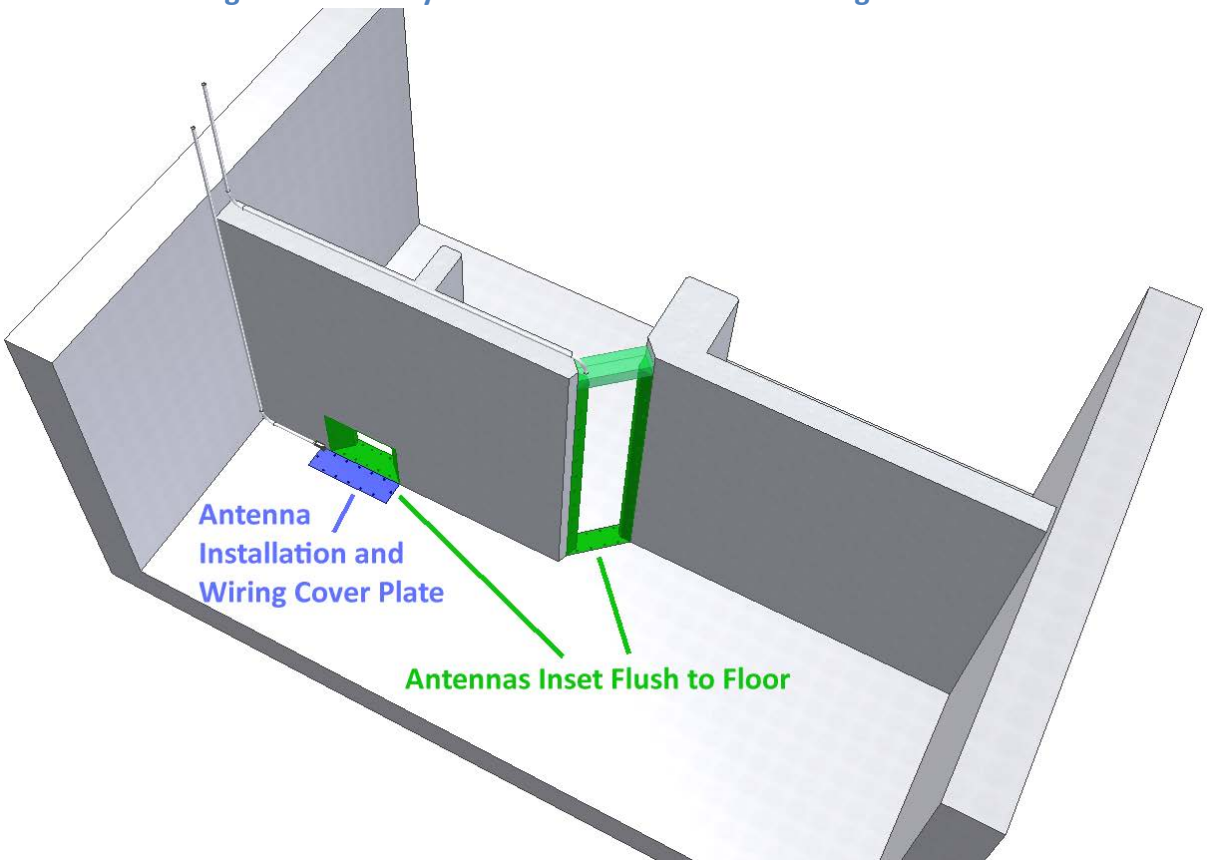


Figure 10 John Day South Slotted Weir With PIT Tag Antennas (looking downstream)

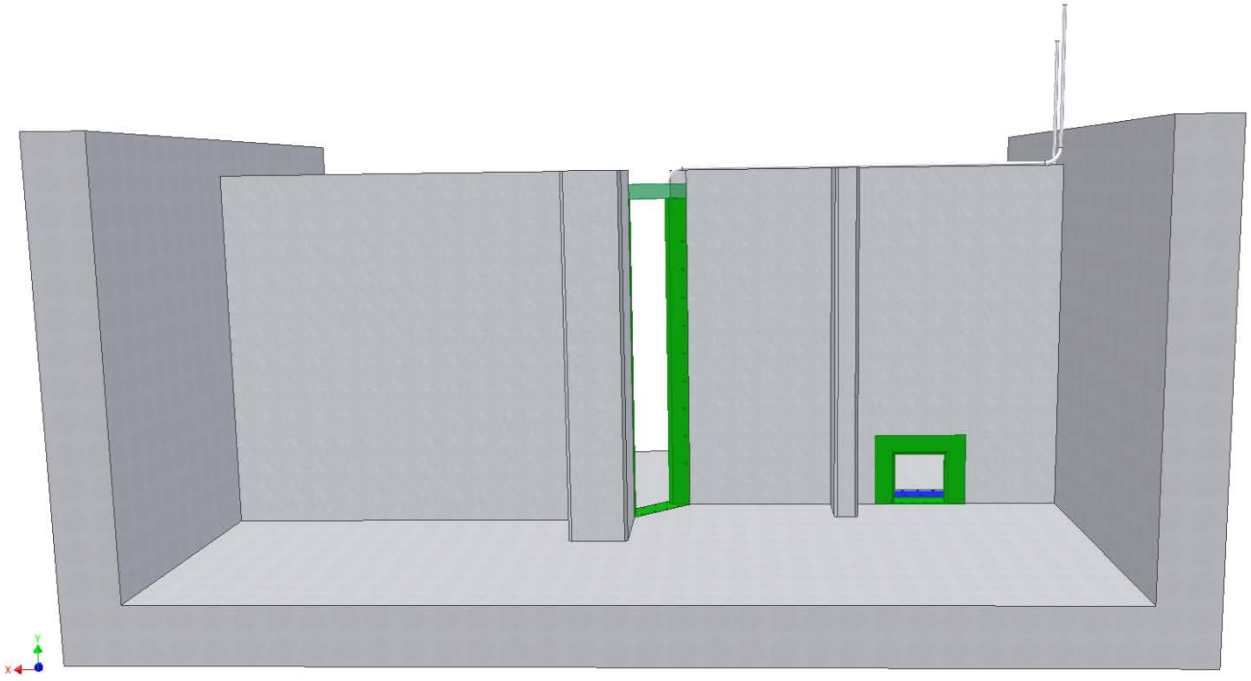


Figure 11 John Day South Slot Concrete Cuts (cut concrete in translucent orange)