

From: Barnard, Bob (DFW)
Sent: Friday, March 29, 2013 7:42 AM
To: White, Megan
Cc: SEPADesk (DFW)
Subject: Response to comments on DNS Water Crossing Structure Design Guidelines

Megan, thanks for your review of the SEPA for our new Water Crossing Design Guidelines. We are grateful for your continued cooperation in the development of the Guidelines and are pleased that there is only one issue that is left to discuss (roughened channels being classified as fishways).

We have had a number of conversations with WSDOT concerning this. On 10/29/12 WSDOT commented:

We don't agree with the inclusion of roughened channels in the Hydraulic Design/Fishway section. Some of the hydraulic design criteria (e.g. EDF) that are proposed for roughened channels were developed for types of hydraulic designs that have different physical processes than a roughened channel (e.g. baffles, weir/pool fishways). In many instances, stream simulation designs will have areas that would deviate from the hydraulic design criteria (depth, velocity, EDF, etc.).

I responded on 11/2/12:

I agree that roughened channel has gone beyond the limited scope it had in years past and that it carries the stigma of a hydraulic method as long as it is in that chapter. But I will say three things:

1. Roughened channels are, by definition, not part of the natural channel continuum. They can be designed so that they are fish passage barriers (too steep, too rough) and they are likely to require some maintenance to stay in working order (depending on slope ratio). The hydraulic method forces them to pass fish to some minimum standard and to provide an inspection and maintenance plan.
2. I think that you are wrong about stream simulation culverts exceeding the hydraulic criteria. I looked at 50 stream simulation culverts in my effectiveness study. At the fish passage design flow (Q10%) only one exceeded the maximum velocity (4.2 fps, well within the standard with an error of about +/- 18% for this estimate). As you can see from Figure 6.10 in the 4th draft of the WCDG all but one of the stream simulation culverts in my study meet the current standard for EDF (and that one exceeds it by about 2%).
3. Paul Tappel had designed and built more roughened channels than anyone in the state and he designs them to these standards and is not constrained.

(The 3rd response is related to your questioning our use of Paul's data).

My opinion has not changed and we will continue to include roughened channels in Chapter 6, Hydraulic Design. Having been part of the design, permitting and inspection of many roughened channels, I am convinced that they carry some increased risk and should not be treated as natural, self-sustaining structures. There are some major roughened channels that are showing signs of deterioration and without some mechanism to monitor and correct them we will have no recourse

except to cite RCW 77.57.030 – not a very effective method. There are other roughened channels that are in great shape after decades of heavy flows. Of course, we don't really know if they are doing well unless we look, so it is a minor thing to ask an owner take a look once a year to see. Over time I expect that we will become more comfortable with certain types of roughened channel and they will no longer need inspection and maintenance.

Please let me know if you would like to continue the dialog concerning this or any other matter.

Sincerely,

Bob

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