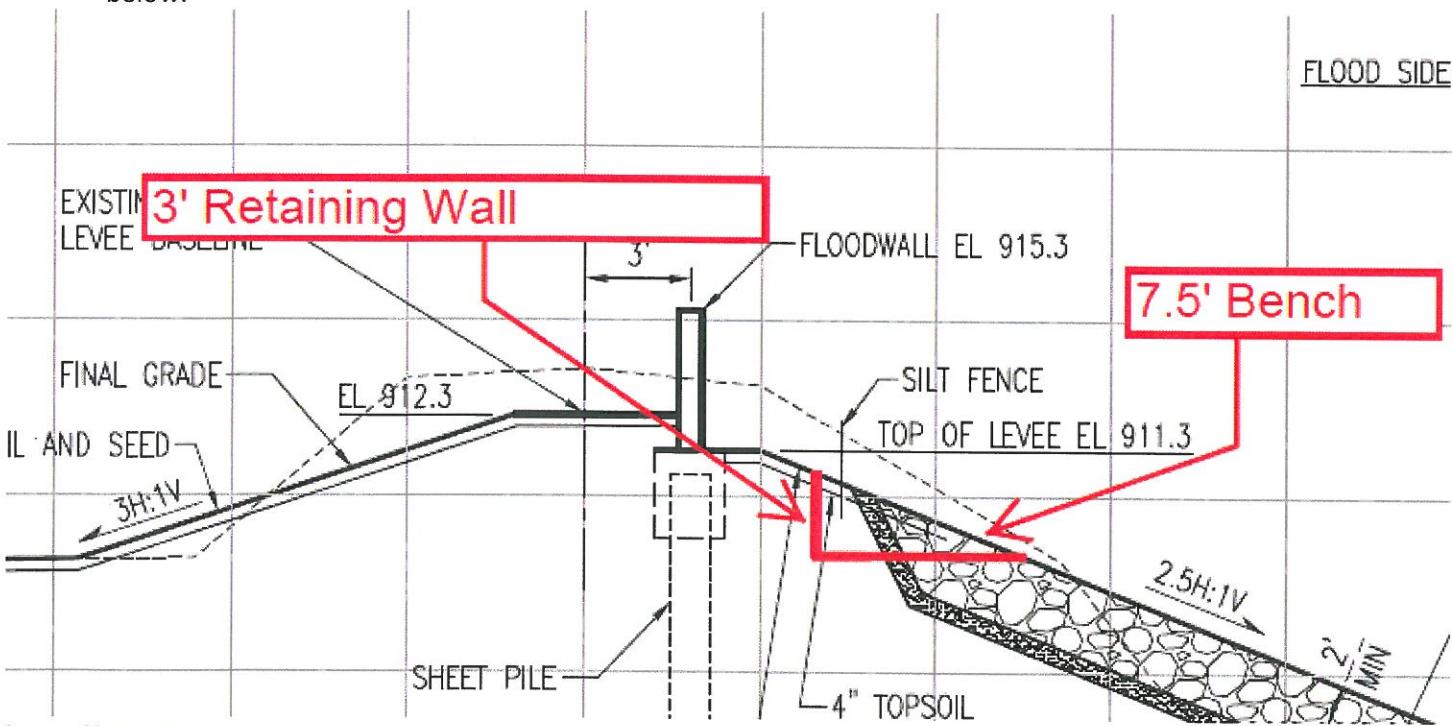


**Cathy Anderson**

**From:** Youngsma, Lucas (DNR) <lucas.youngsma@state.mn.us>  
**Sent:** Tuesday, January 29, 2019 11:21 AM  
**To:** Cathy Sue Anderson (cathy.anderson@granitefalls.com); Domeier, Chris R (DNR); Losinski, Jeremy (DNR)  
**Subject:** Floodwall near U/S Portage, Granite Falls

I had a conversation with the consulting engineer the City hired in 2010 to help get the floodwall certified with the USACE & FEMA. We talked through a couple possible access improvements and possible regulatory considerations with them. Three ideas for consideration came up. Summary is below.

1. Uncertain regulatory considerations, cost uncertain, low risk: permanent (more issues) or temporary stairs over floodwall. Practical issues – routine removal and installation, design, ease of use with canoe or kayak, 3' wall height one side-4' wall height on other.
2. Costly, feasible, multiple regulatory review steps, high risk, active maintenance and oversight: cut notch in floodwall, install active or passive flood barrier. Multiple companies sell their patented version, <https://www.floodpanel.com/> <https://www.psflightbarriers.com/> <https://floodbreak.com/> (Lucas not excited about this option at this location)
3. Costly, but geotechnical stability seems possible, multiple regulatory review steps, risk addressed by construction methods: excavate 3' down and install a structural retaining wall on the river side. Install 7.5' wide walkway, ~175' long, ~elevation 908. Add treated timber stairs at roadway to come up 7-8' to roadway. Visual below.



## Lucas Youngsma

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