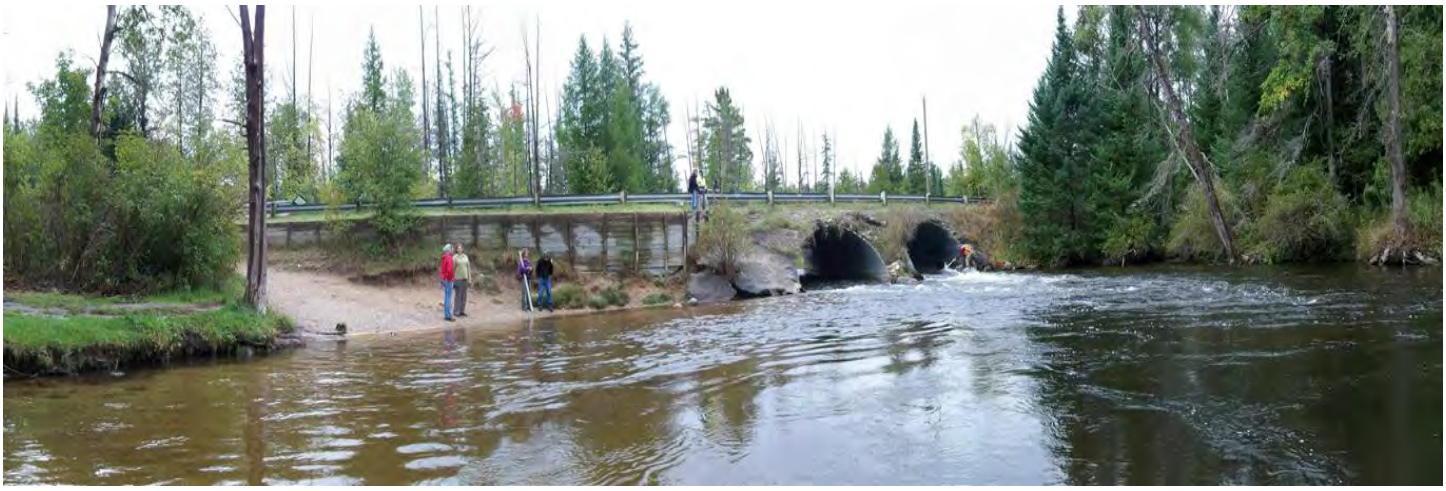
Jordan River Chestonia Bridge Project Photo Report

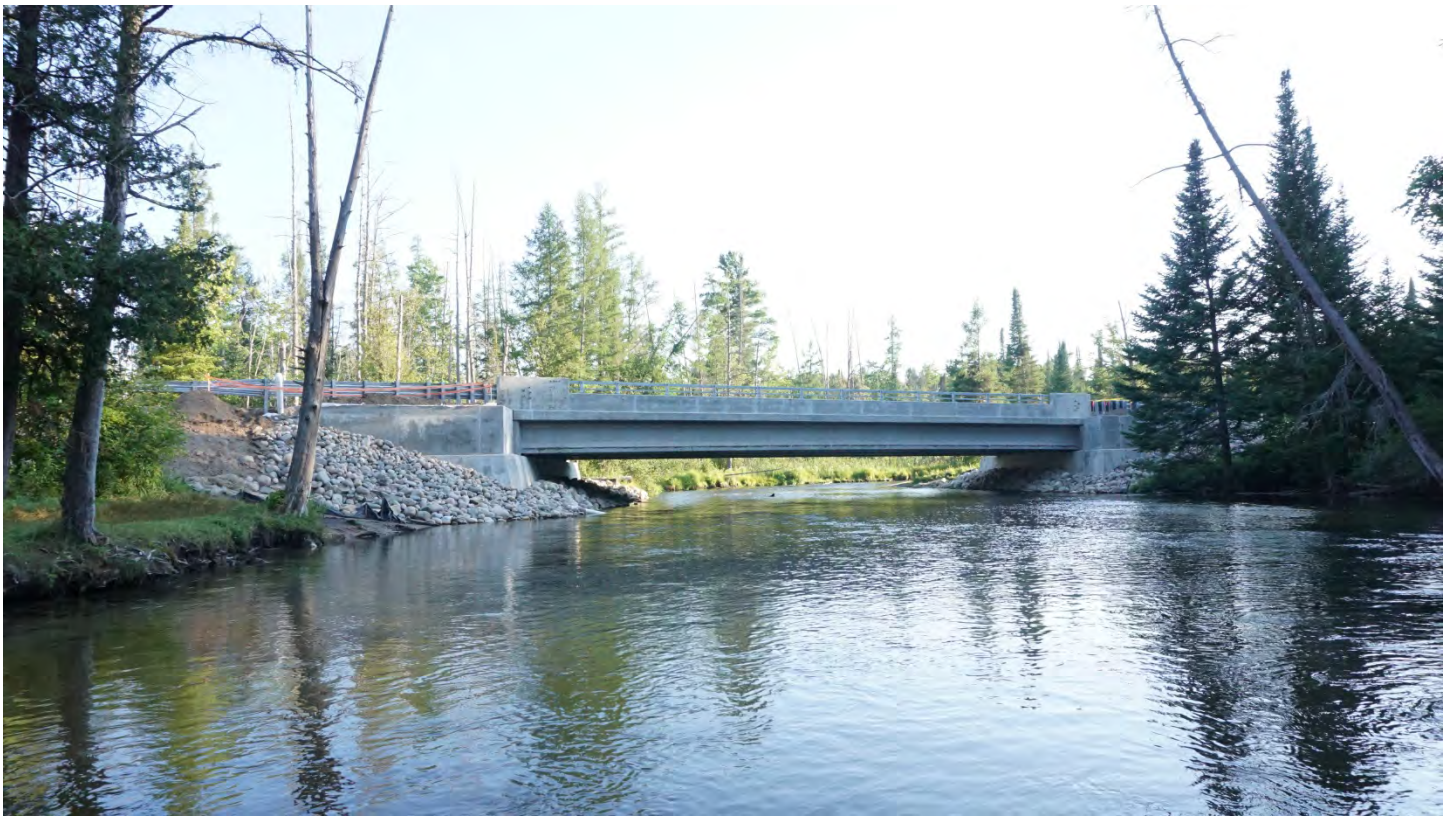
Before - Inlet, 16’ wide culverts funneled the 50’ wide river under the road. The design survey showed that the culverts were sitting 2’ above what was the original stream bottom elevation.

After – Chestonia Bridge! A 90’ span concrete bridge allows for the natural flow of the river during high water events & for the movement of fish, wildlife, aquatic insects at all life stages.

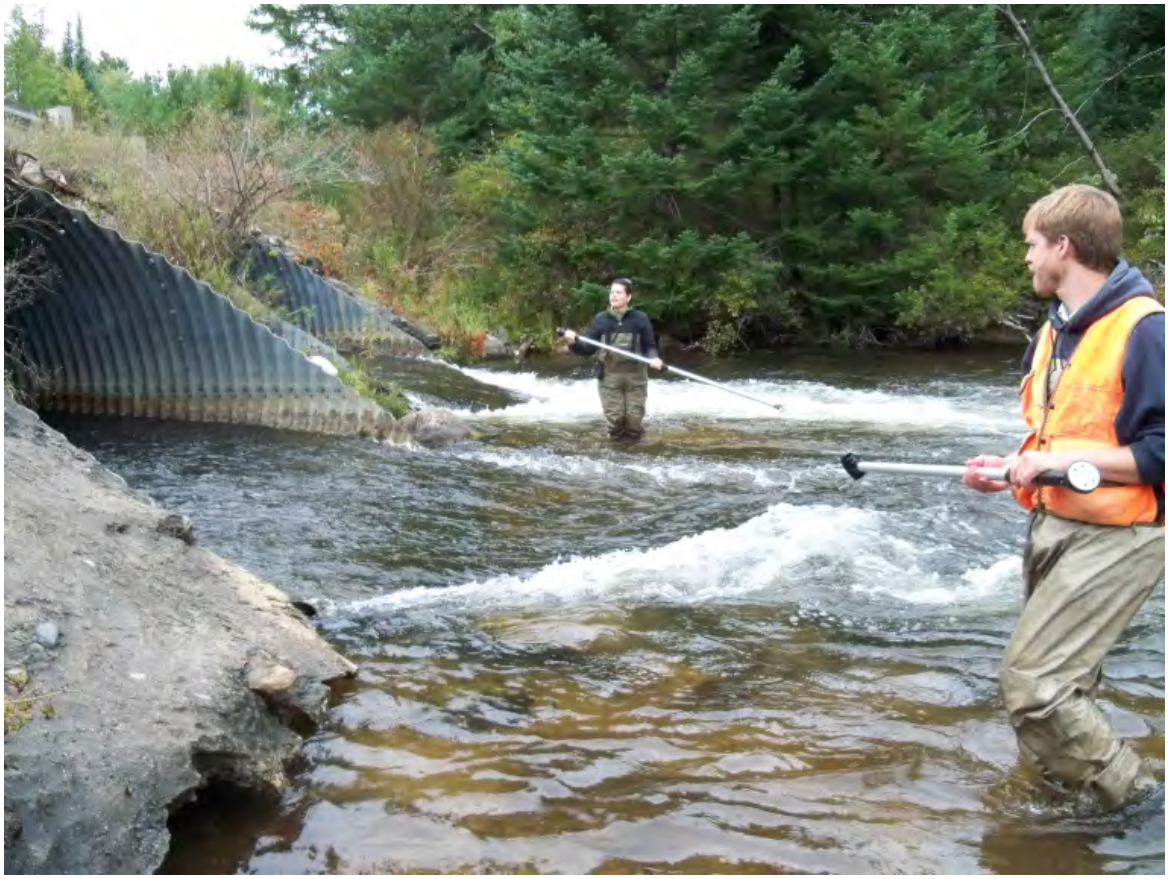
Before – Culverts caused major pool formation at both the inlet & outlet, giving water a chance to warm & sand to build up over time. This is not ideal instream habitat.



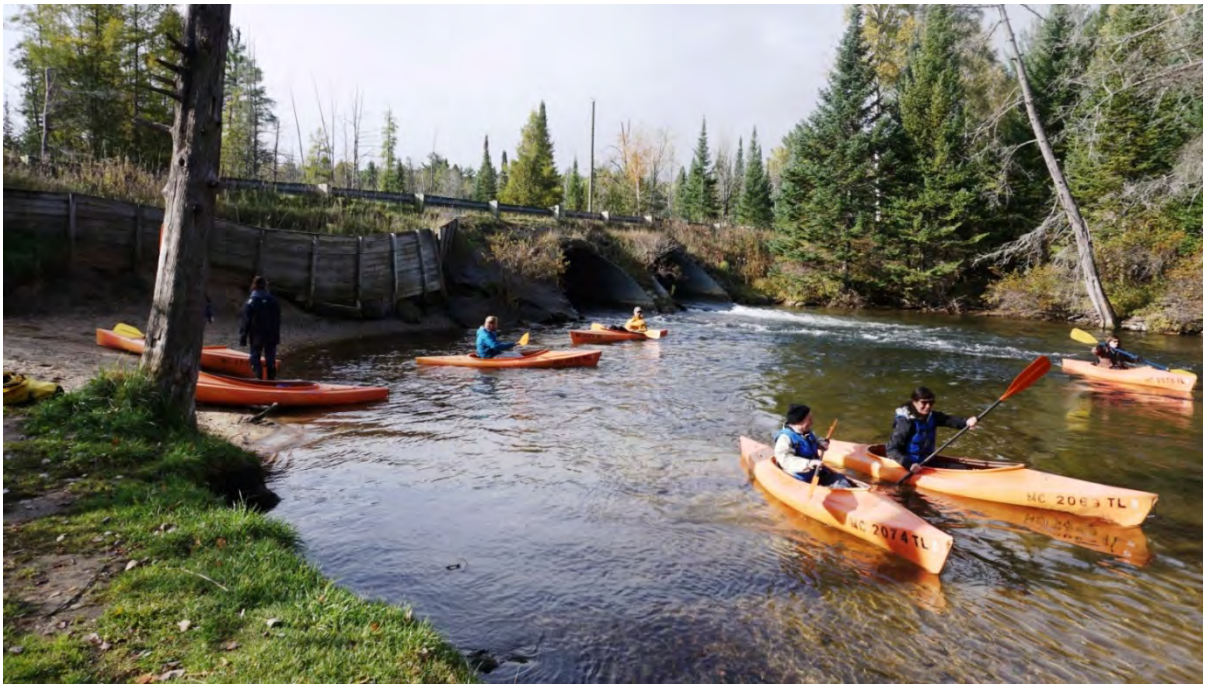
After – Bridges are the preferred structure for mainstem crossings; they allow for a natural stream bottom & the movement of fallen trees, branches, leaves. This is also safer for paddlers.



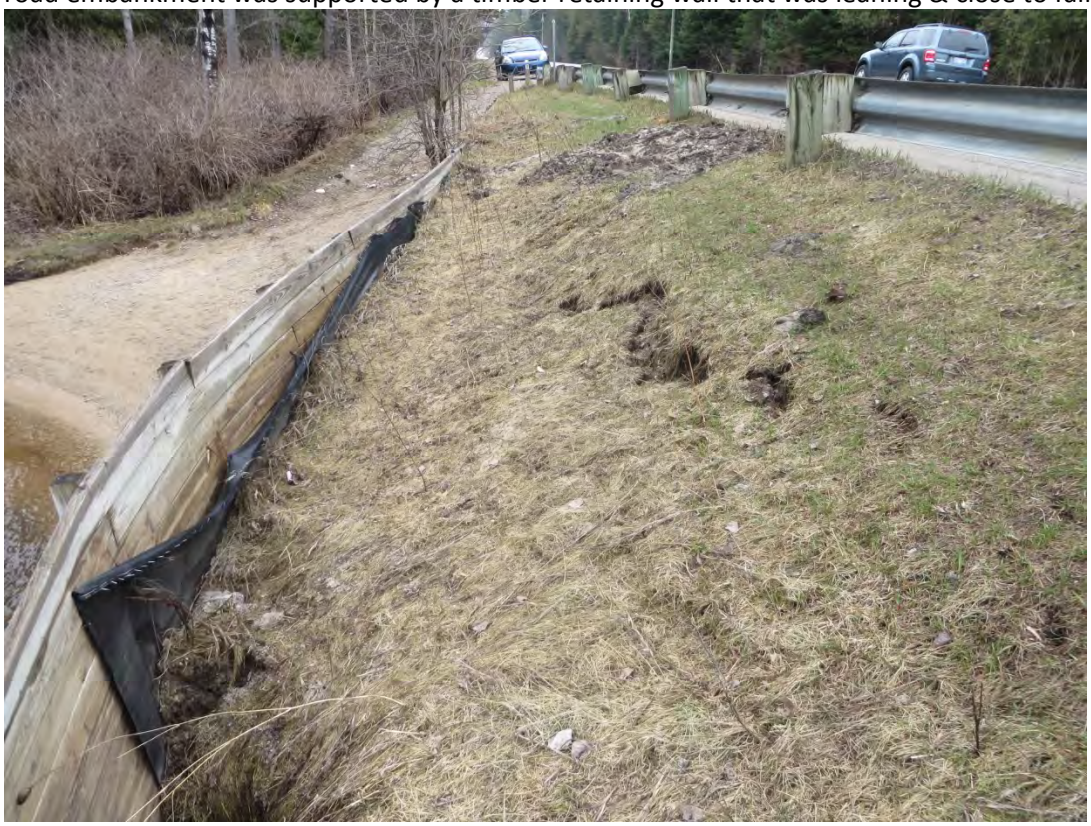
Before - Stream velocities approached 11.5 feet/second, over 5 times higher than what they should be (further upstream it only measured 2.2). The day we took these measurements the river was flowing at 195 cubic feet/second (cfs). For comparison, heavy rain in October 2017 caused the river to spike to 780 cfs. Typical rain events can increase flow to 400 cfs. Imagine a young fish trying to swim upstream through these.



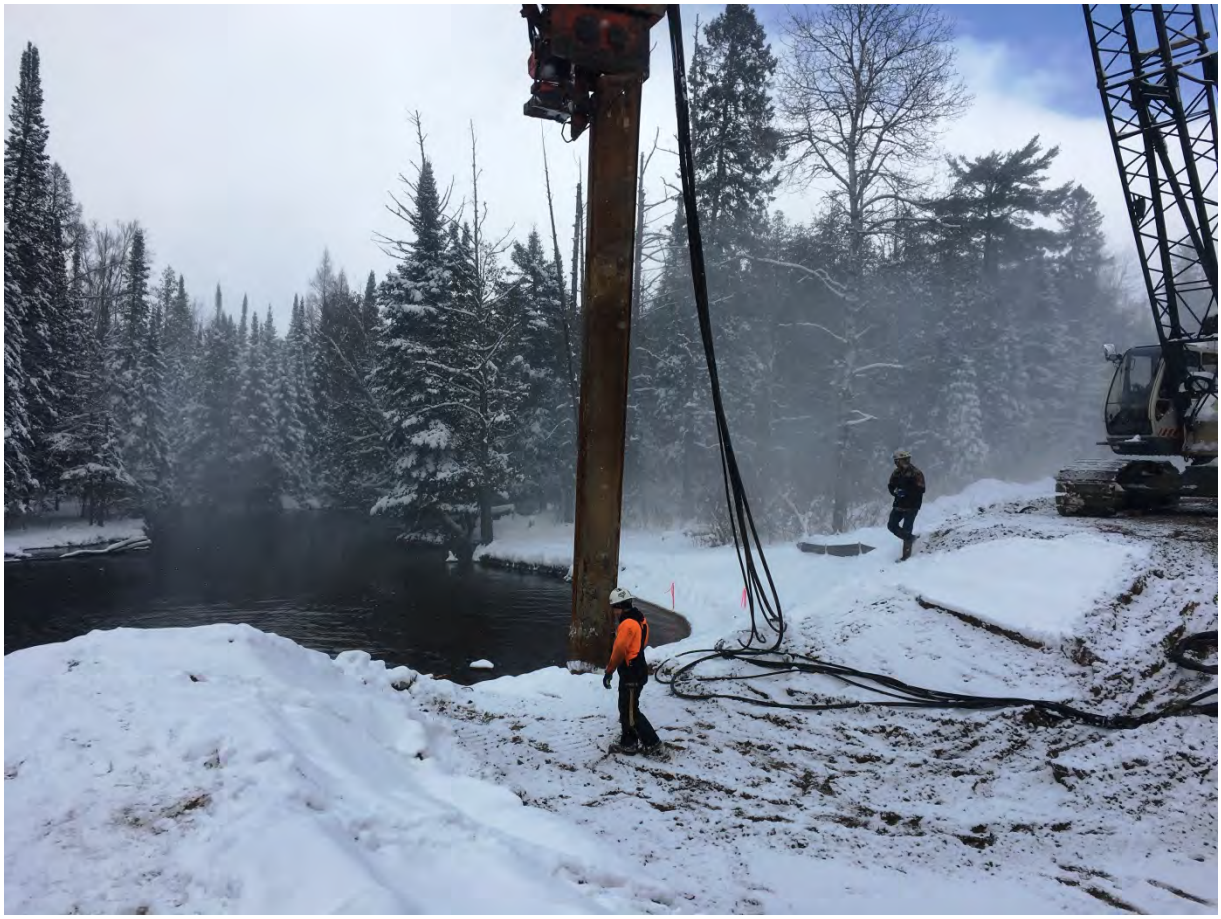
Before - Recreational use at the outlet was heavy; the illicit “driveway” down to the river caused bank erosion and reached out of the road-right-of-way onto private land where 12’ of riverbank had washed away over the years.



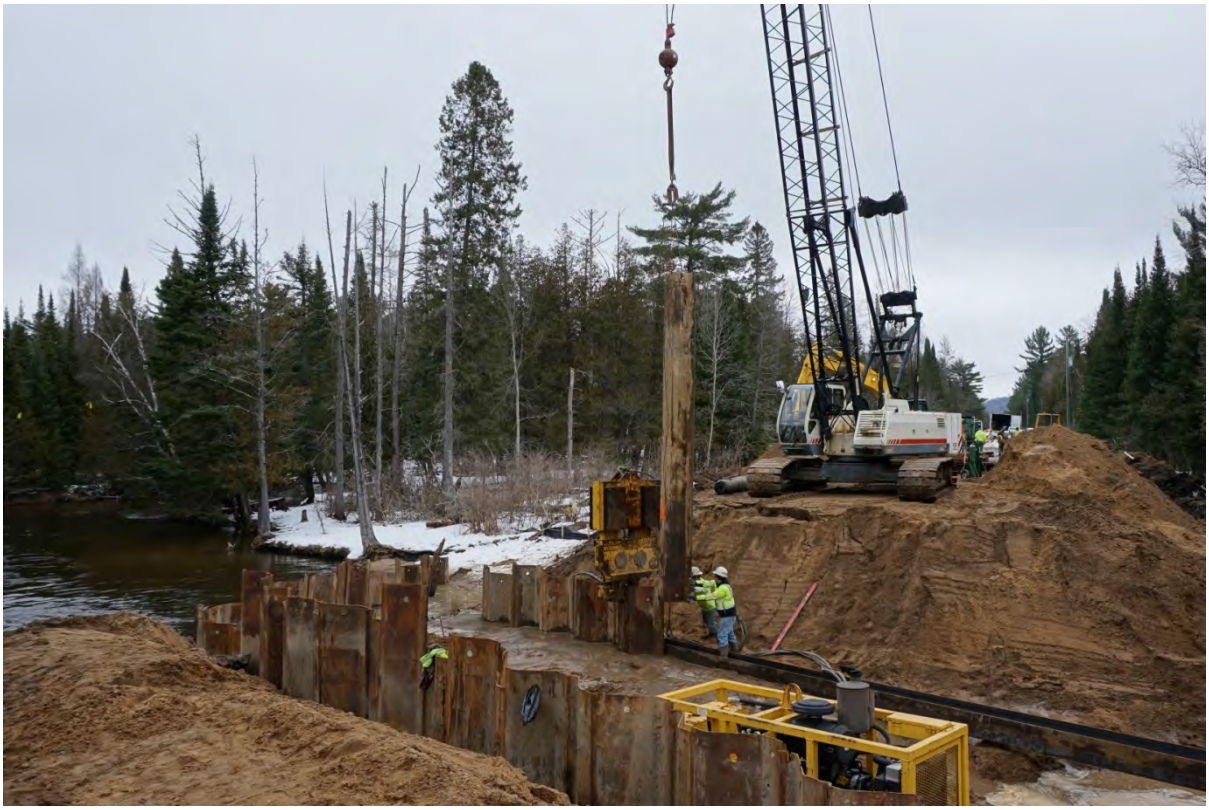
The road embankment was supported by a timber retaining wall that was leaning & close to failure.



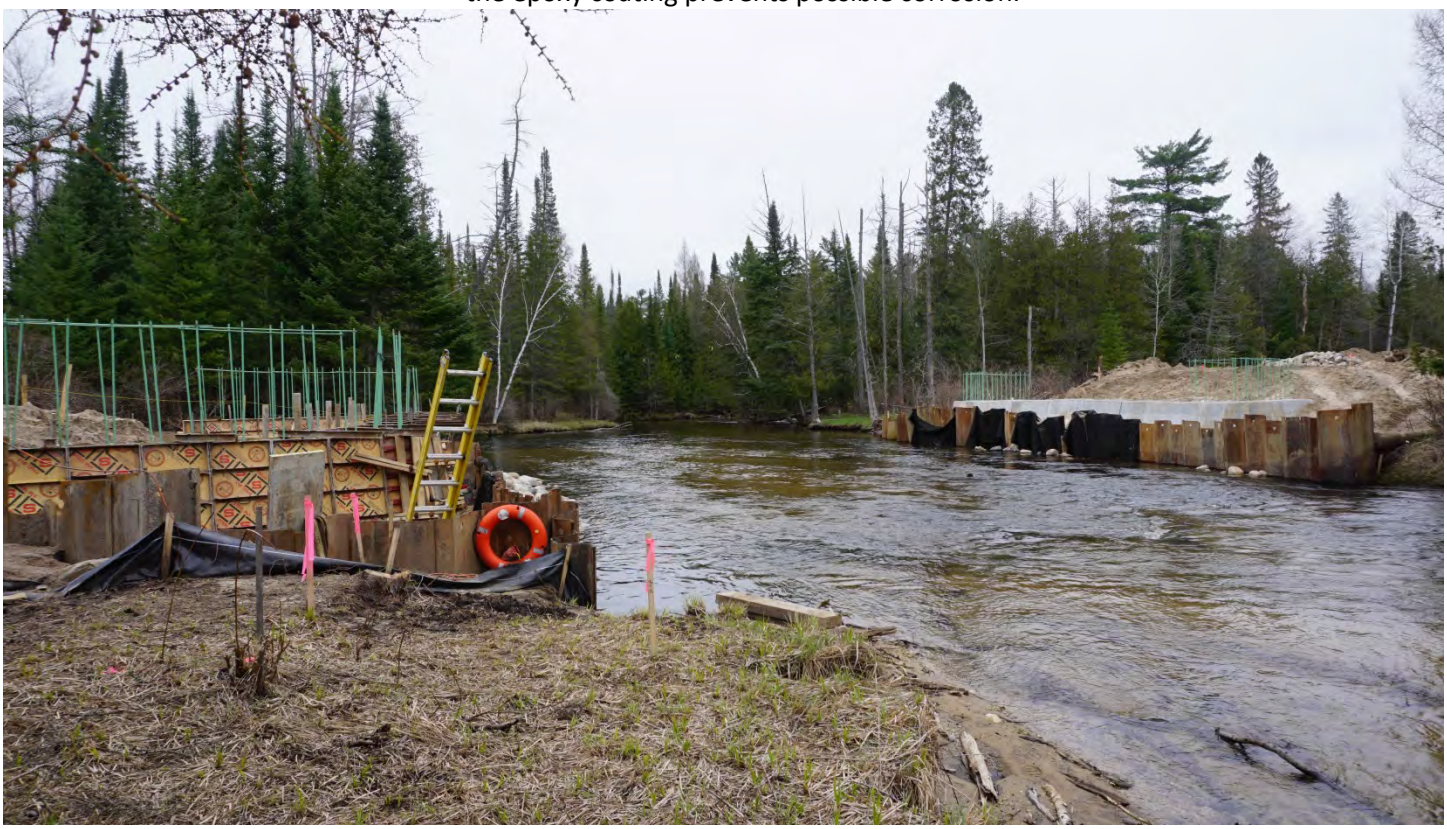
February 2017-Getting started! Driving sheet pile east of the culverts to re-route water & dewater the construction zone.



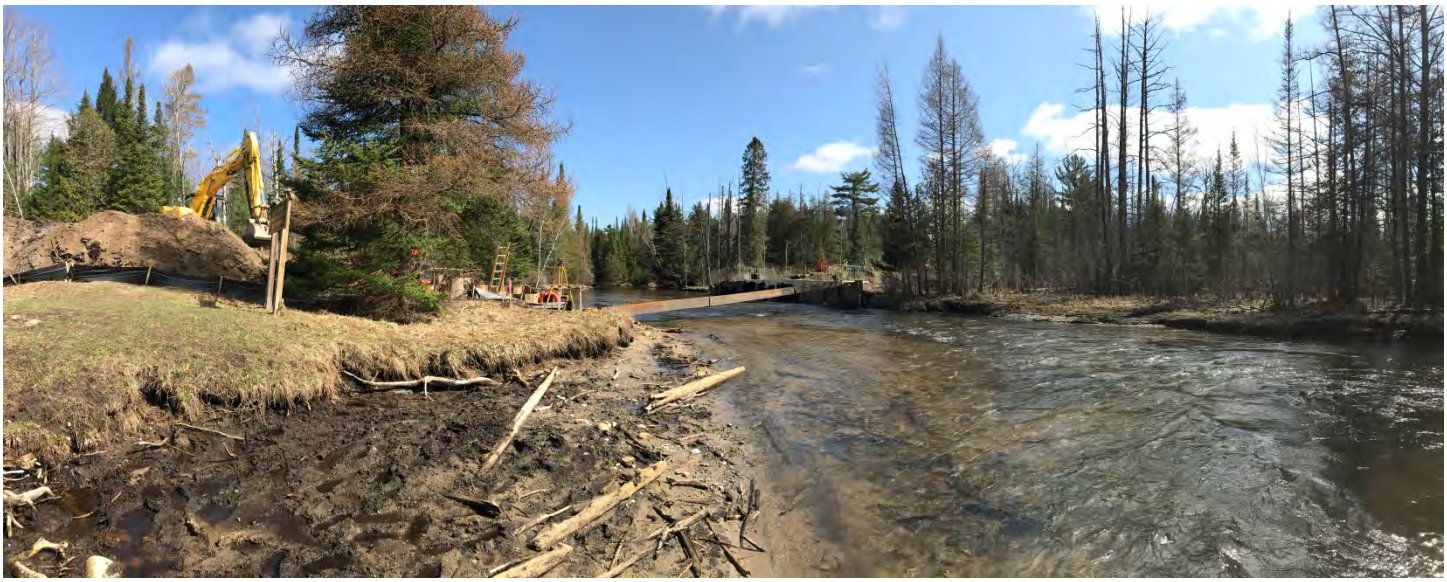
Sheet pile work continues & provides a channel for the river to flow during construction so that the support structure of the bridge can be built in the dry.



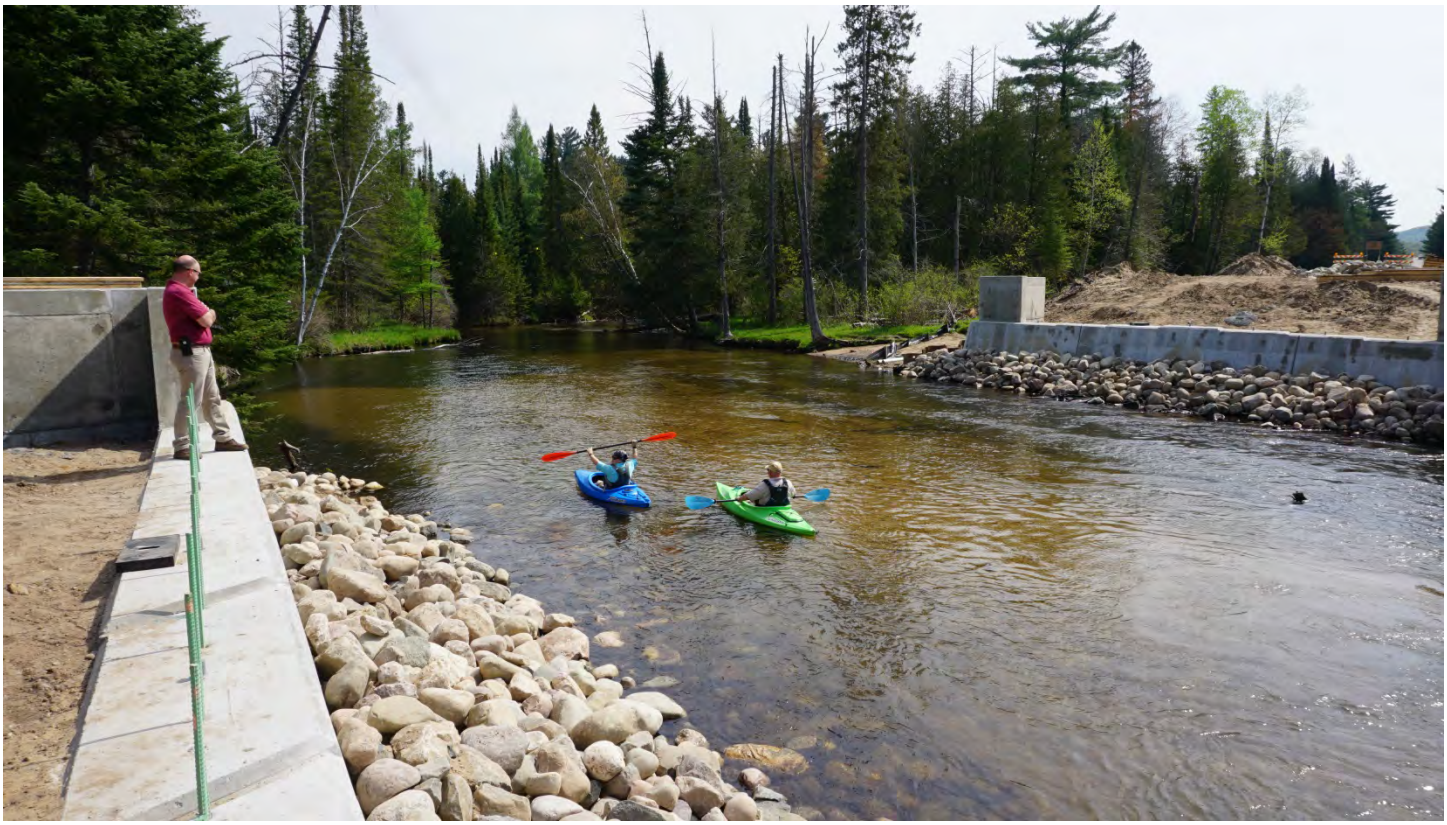
East footing constructed with concrete poured & cured. The “forms” for pouring the concrete are comprised of frames made of green epoxy coated steel rebar & plywood. The rebar provides the “skeleton” & the epoxy coating prevents possible corrosion.



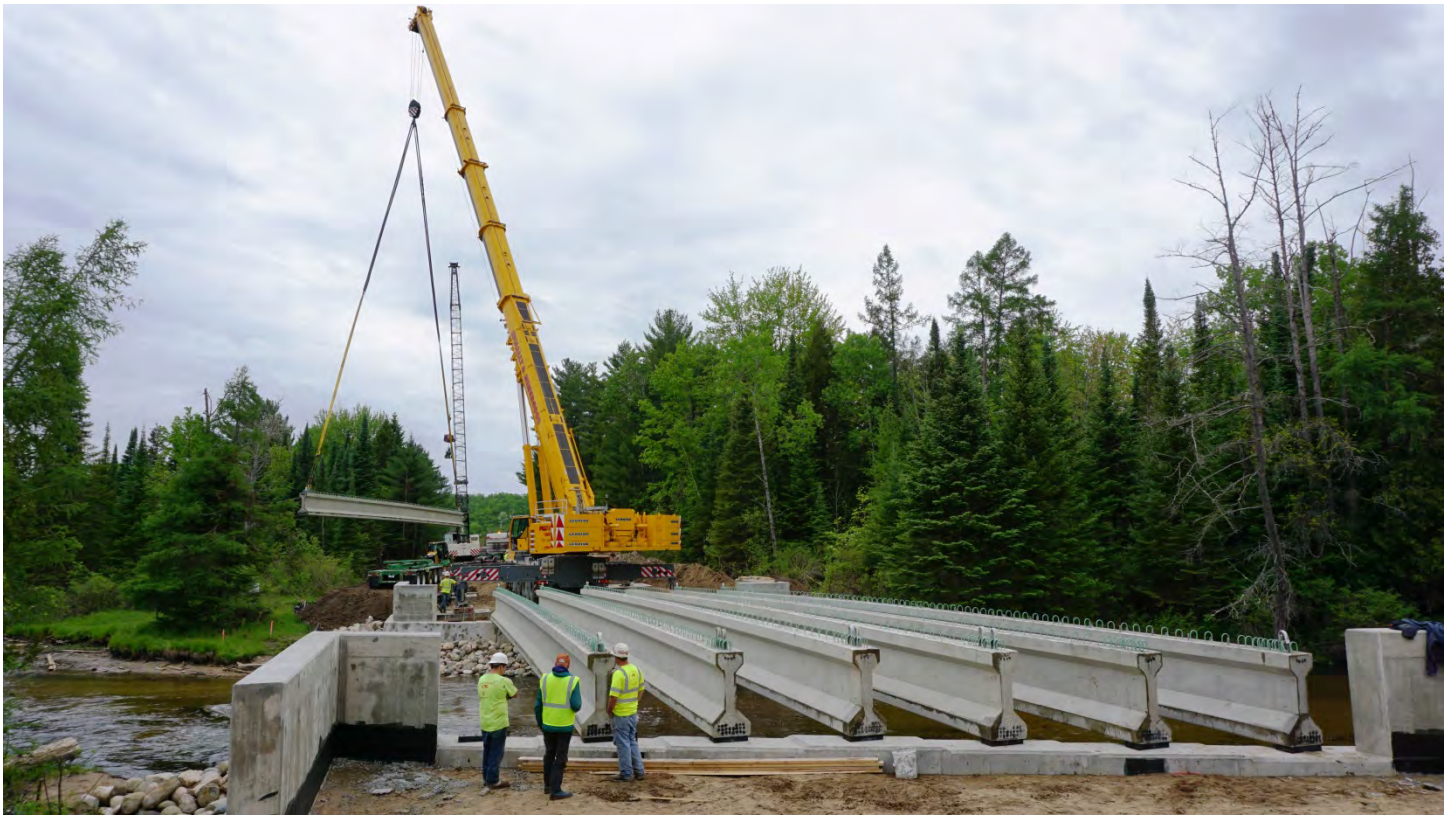
Removing the culverts allows the river to “breathe.” Note the area in the lower left corner that was previously submerged.



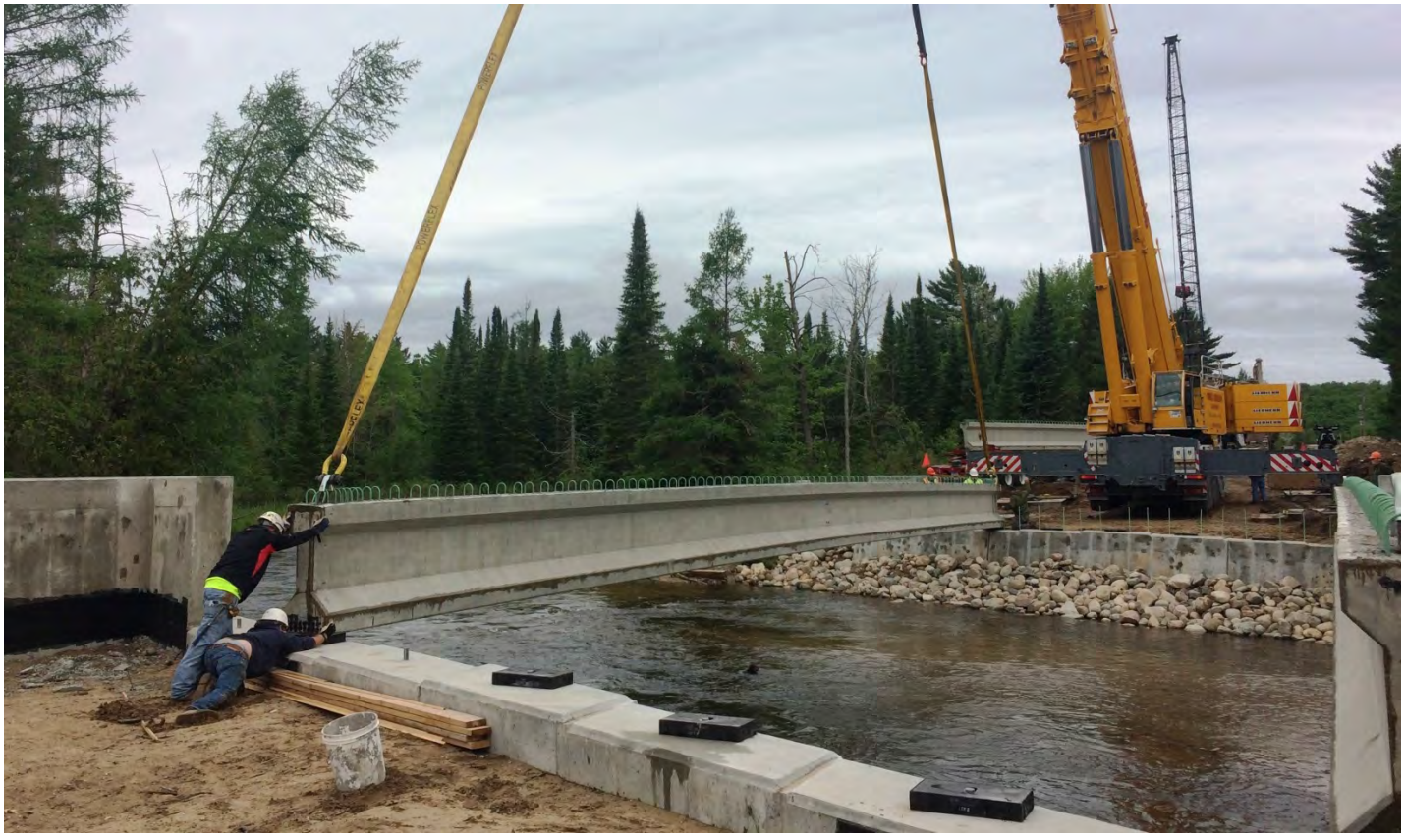
Footings & wingwalls are constructed. Kayakers enjoy the free flowing river, one of them paddling the Jordan for the first time. Road Commission Engineer-Manager, Burt Thompson, looks on.



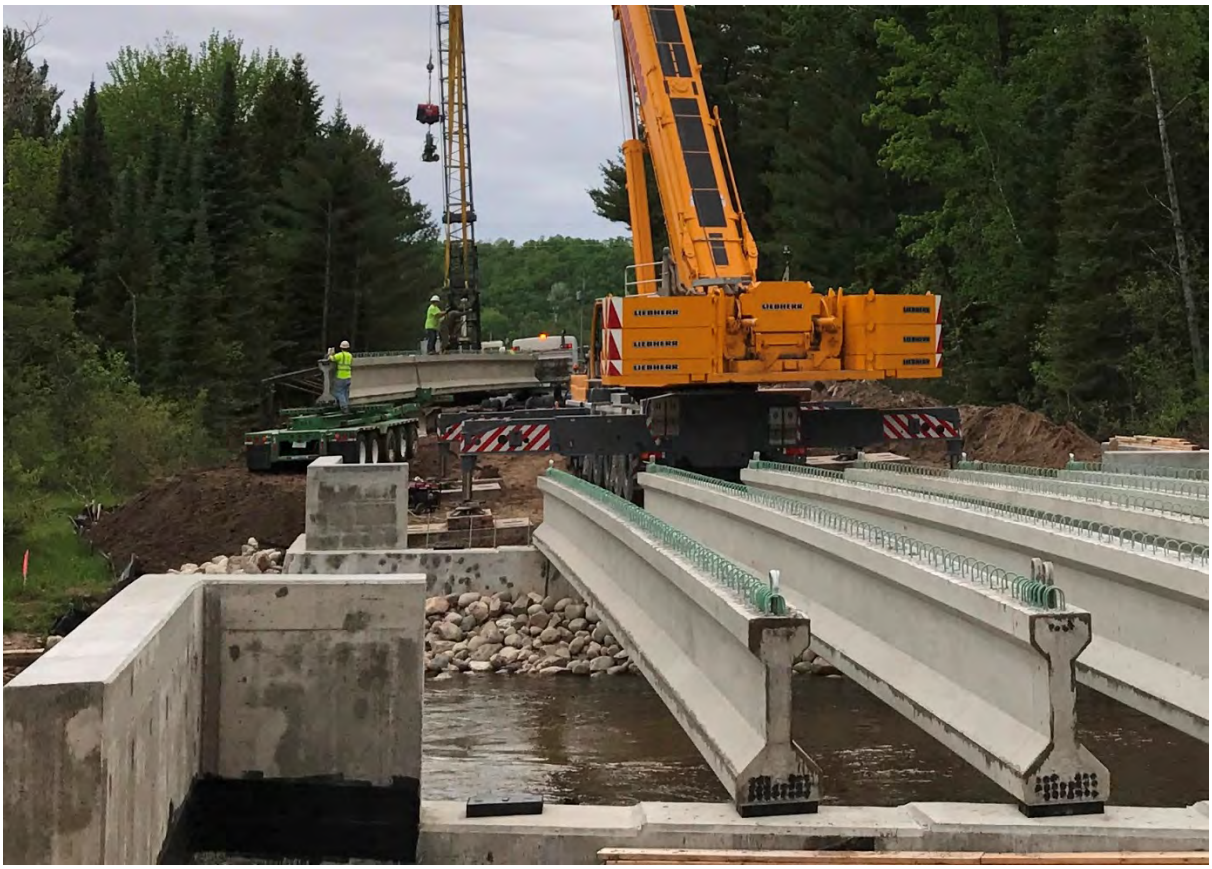
Beam day! Seven concrete I-beams weighing 26 tons each, measuring 88’ in length were set to comprise & support the deck.



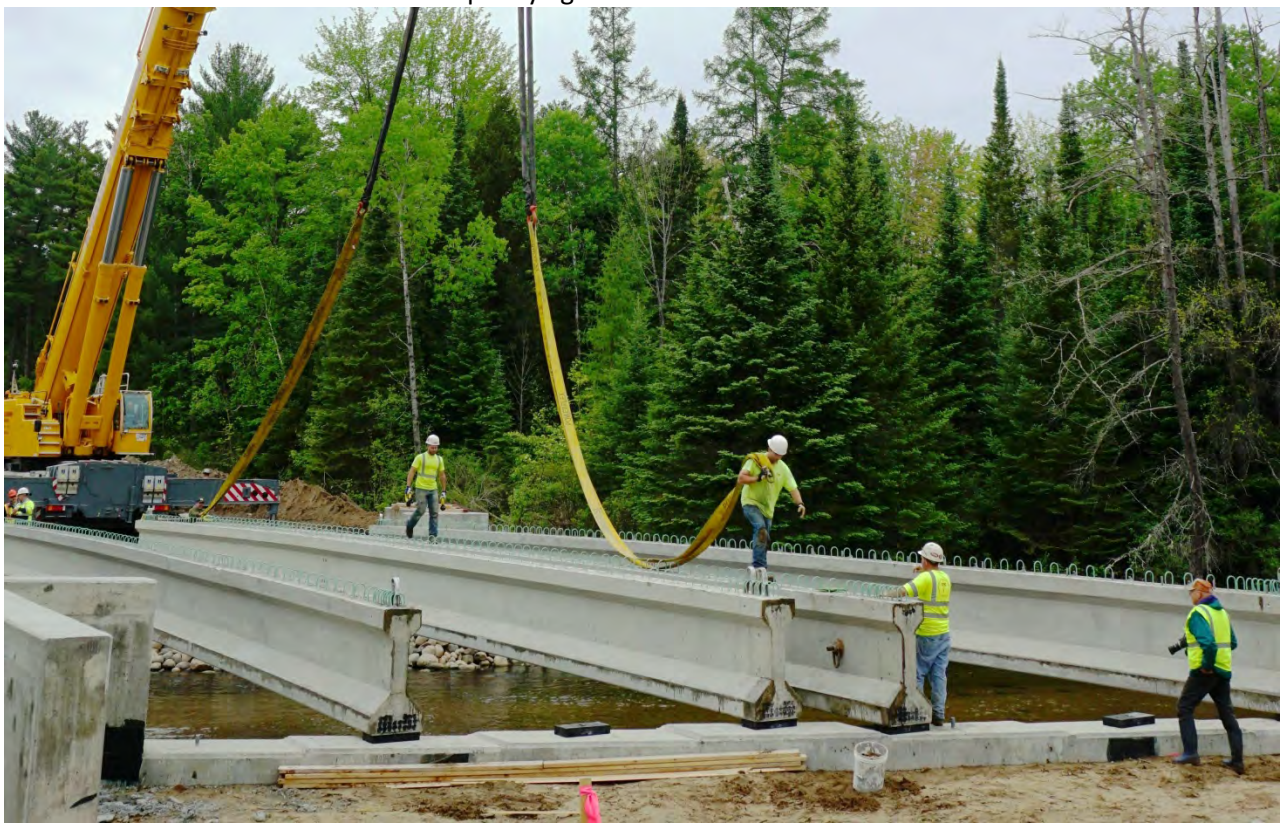
Got to get them just right!



Because of their size, beams were trucked individually up from Kalamazoo where they were cast. Semi-trucks backed almost a half mile down the road from the highway to the site, where a crane took it from there.

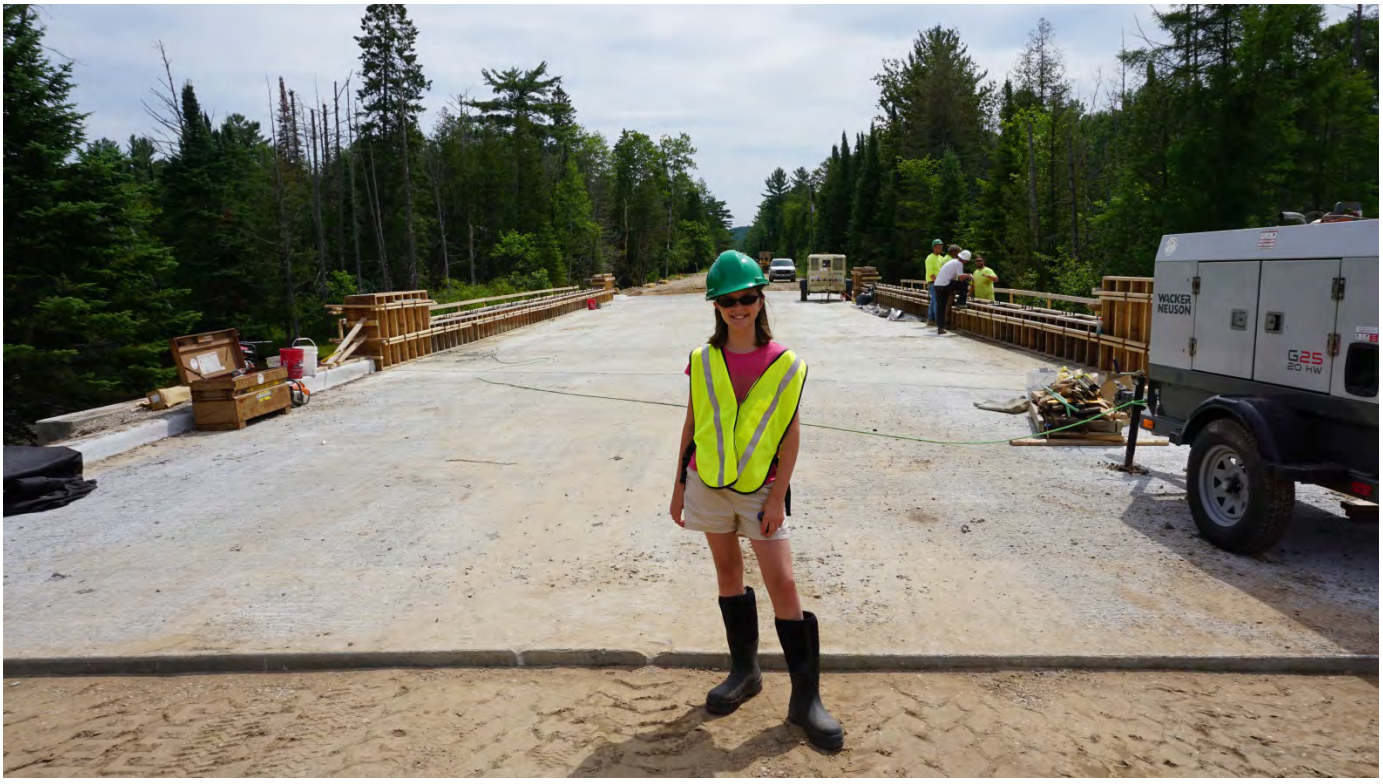


Workers have to be pretty agile & able to balance for this beam work.

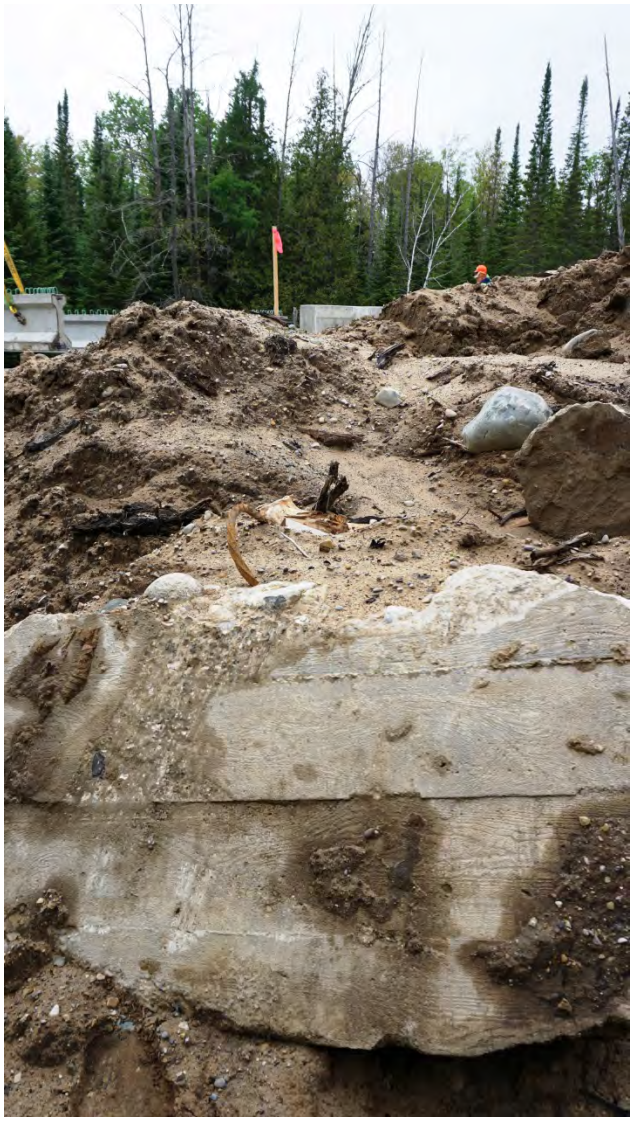


Pouring the concrete deck! Looking at the concentrated steel rebar form for this, you know it will be sturdy.

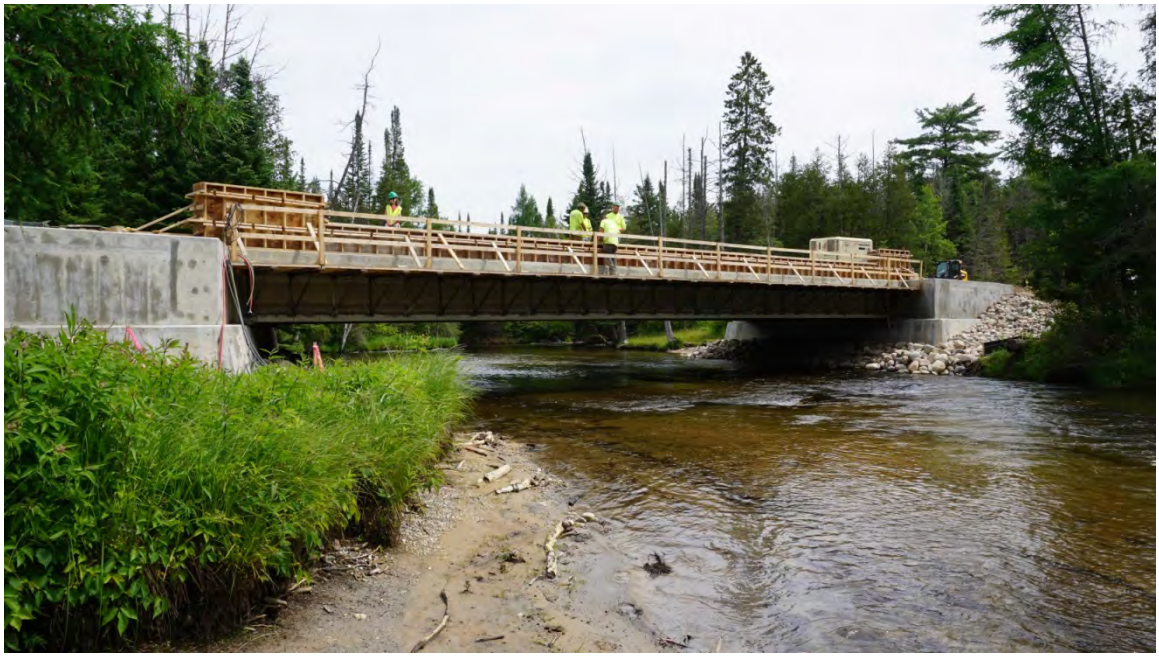
Bridge deck looks awesome & accommodates two 6’ wide shoulders & two 11’ wide vehicle lanes for a total width of 34’ versus the former 25’ width.



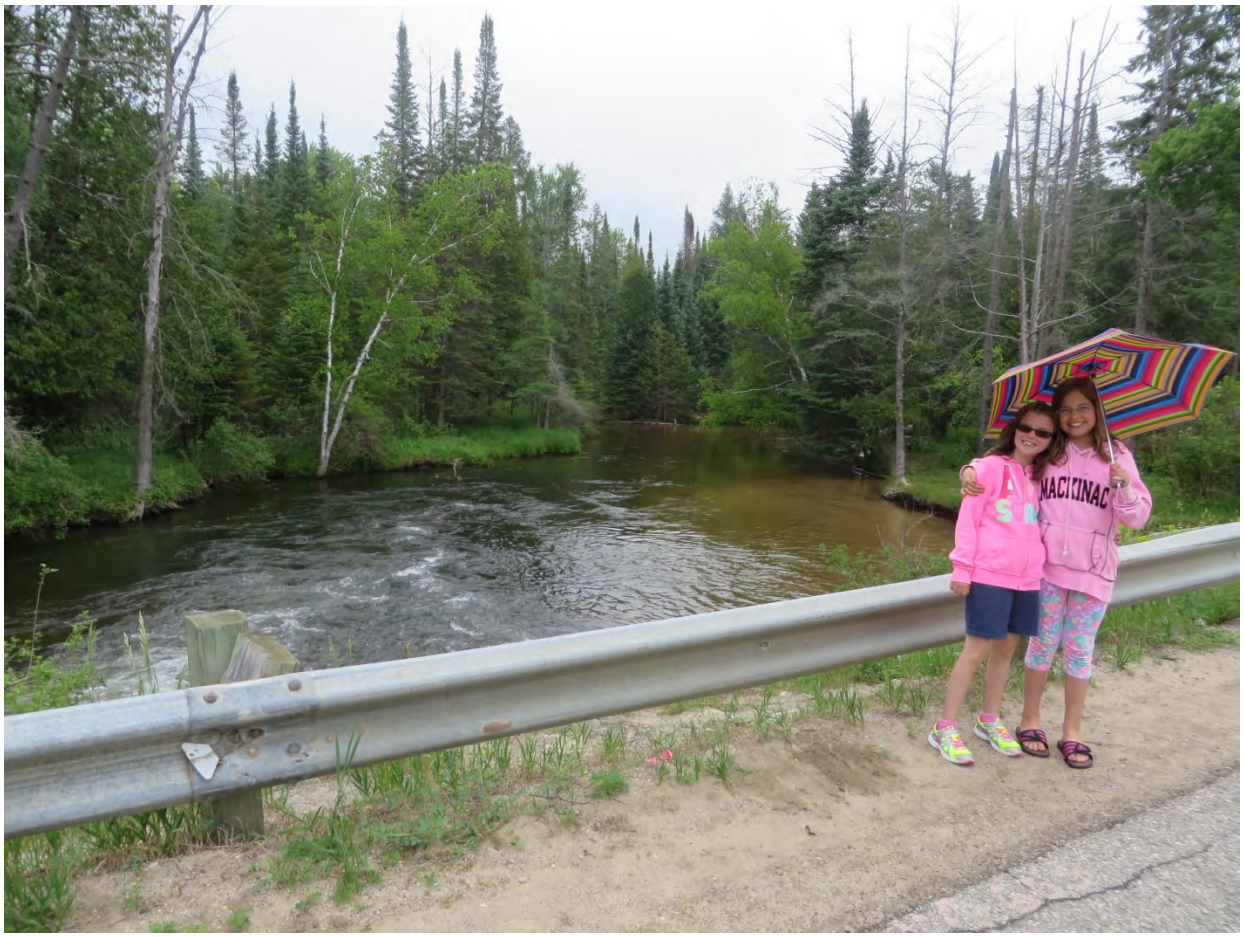
Replacing old with new. There was originally a bridge at this site before the culverts were installed in the 1960s. An old bridge concrete abutment was excavated during construction. Note the wood grain impressions from the form used to pour & set it.



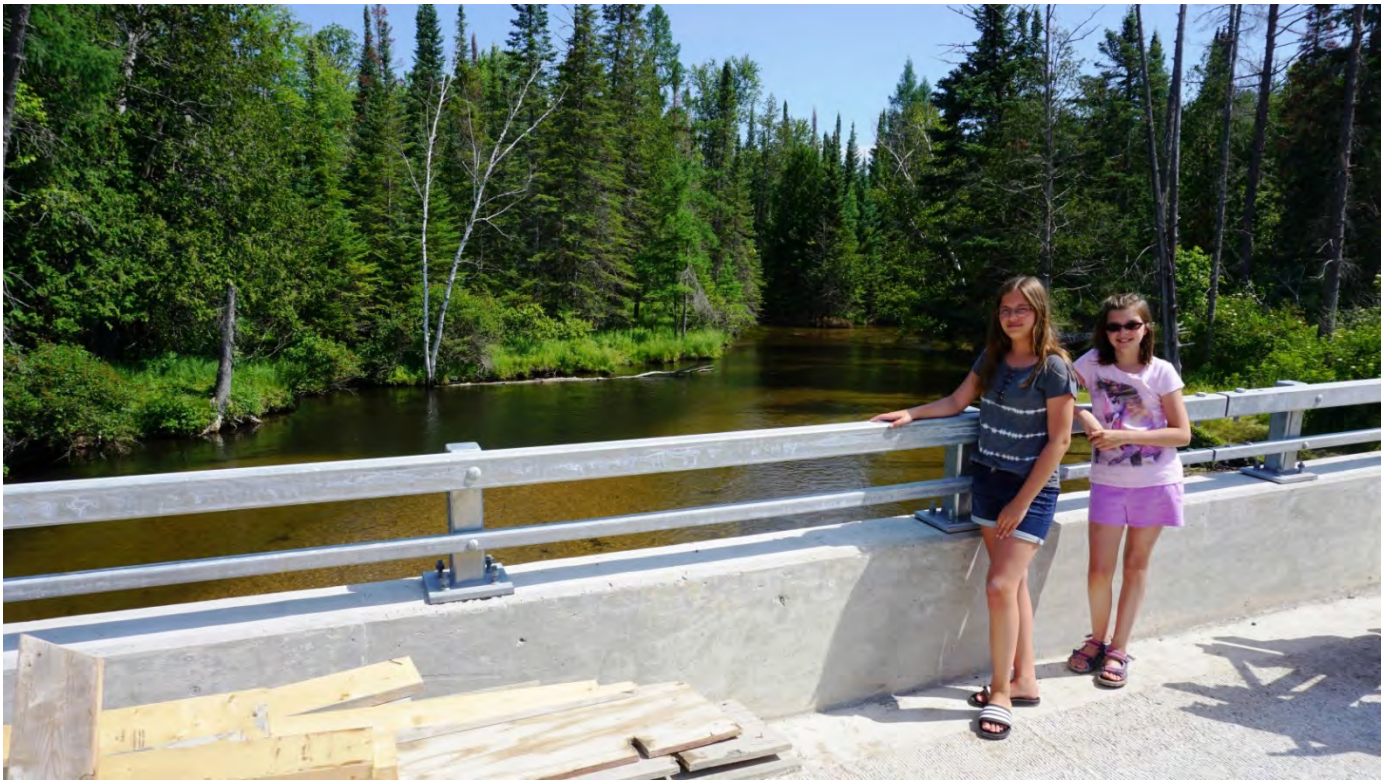
Getting ready to pour the end sections & side walls of the bridge rails.



Before – The old guardrail & sandy road shoulders weren't ideal.



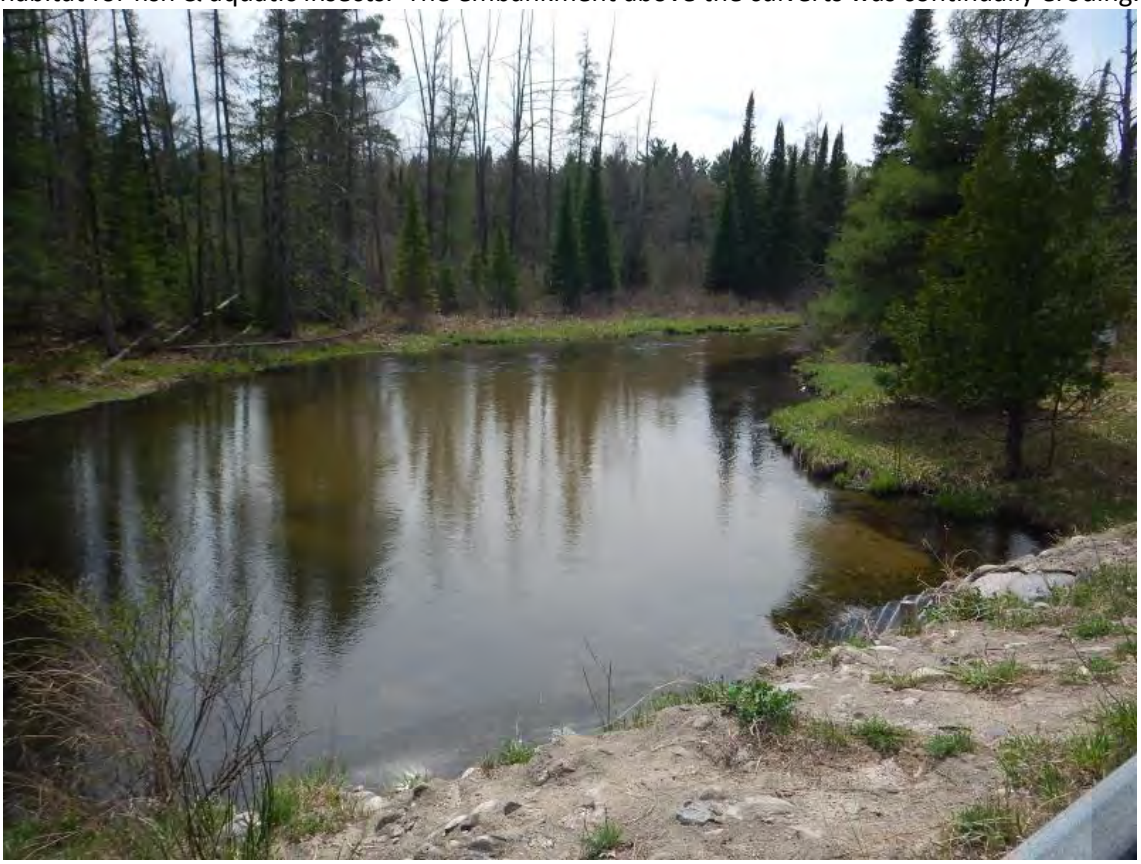
After - Bridge rails are 54" high & have parapet tubing; they are safe for both pedestrians and vehicles.



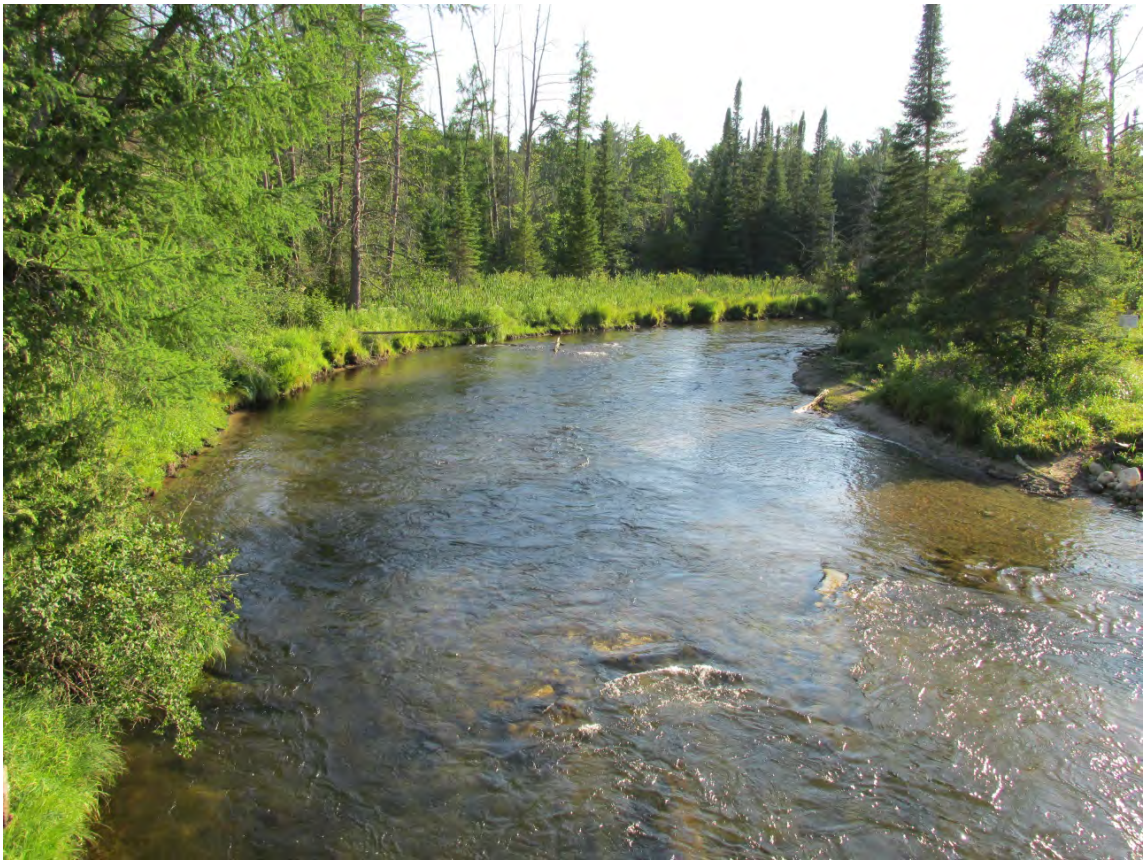
For the last 50+ years the undersized culverts caused marl to build up as hard formations at the inlet reaching 800' upstream. This will gradually wash away over time to reveal the natural stream bottom.

Marl formations are sizeable and actually pretty interesting; rust color shows the presence of iron in the water. Some of it was chipped away for paddler safety, most of it will have to wash away over time.

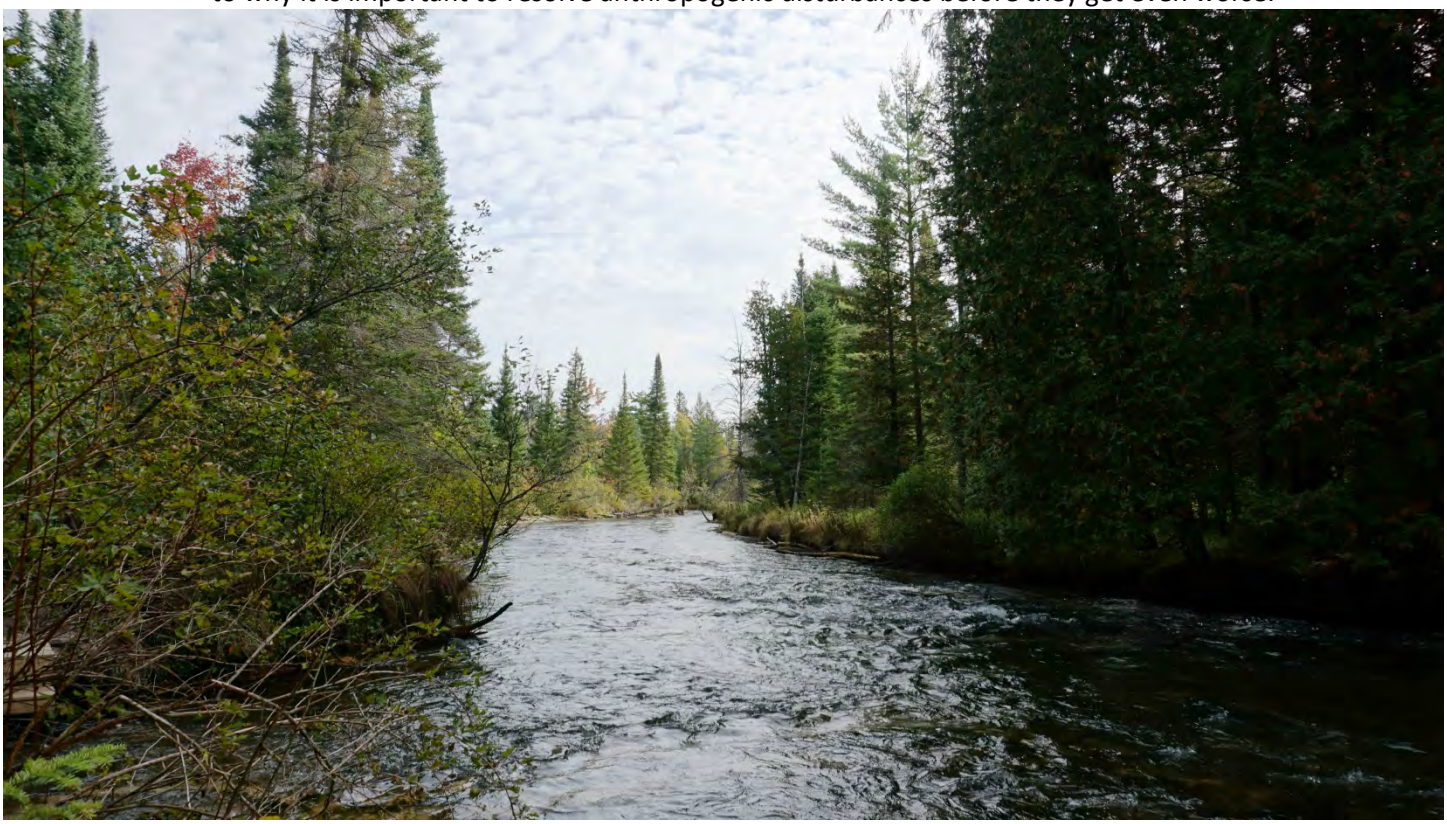
Before – Looking upstream from the crossing; the river was slow & wide. Areas like this can get warm & shallow, not ideal habitat for fish & aquatic insects. The embankment above the culverts was continually eroding.



After – The same view, note how the current is fast & river has narrowed. No more eroding embankment to be concerned with either.



After – About 800’ upstream of the crossing, the Jordan River is a model of a healthy Great Lakes stream corridor, attesting to why it is important to resolve anthropogenic disturbances before they get even worse.



The Chestonia Bridge Project is an excellent example of how partners can accomplish so much more when we stack hands & build upon each other’s strengths.