

Bear Creek Culvert Pine City, MN

PCE completed a culvert design project for a township road culvert crossing at Bear Creek, five miles east of Pine City, in Chengwatana Township. This State Aid Project included a comprehensive hydraulic analysis and risk assessment for the drainage structure, followed by a final design of the widened roadway and two 8' x 8' concrete box culverts to replace existing 90" corrugated metal pipes.

Bear Creek runs southerly through Chengwatana Township, intersecting Crooked River Road approximately one-quarter mile before draining into the Snake River. With a drainage area of about 9.5 square miles, the proposed design required sizeable culverts with adequate erosion protection to handle the calculated storm drainage volumes without causing damage to the roadway embankments or the culverts themselves.



Crooked River Road crossed Bear Creek on a high fill with 10' lanes and no shoulders. Side slopes had a steep 1:1 slope. The new roadway section has 12 ft. driving lanes, 4' wide shoulders, a 4' wide zone of 1:4 embankment, matching into a 1:2 slope, thus creating an 8' clear zone recovery area to satisfy MnDOT State Aid Standards. Riprap and geotextile filter fabric at the inlet, outlet, and embankments was included to eliminate erosion of the embankments and the river channel, solving a problem for Township maintenance at this location.

PCE used Eagle Point[®] and AutoCAD[®] for the design of the roadway/culvert plans. PCE provided construction administration and field observation services during the construction of the project.

Design of the Bear Creek drainage structure and roadway improvement was one of the many projects that PCE has successfully completed on time and within budget for the Pine County Highway Department.

Client: Pine County and Chengwatana Township

Client Contact: Mark LeBrun

Construction Year: 2004

Project Cost: \$106,000



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