



# Local Operational Research Assistance (OPERA) Program

## The Otter Claw

Otter Tail County, Minnesota, has more than 1,000 lakes, more than any U.S. county. As a result, highway department maintenance staff handle many water-related problems affecting county roads, including frequent stream backups caused by beaver dams and other obstructions. Culvert cleaning crews have spent many hours manually unclogging culverts, which can be a dirty, dangerous, and labor-intensive job. But the department's new skid steer attachment has changed all that.

### **Safely removes large amounts of debris in minutes**

Otter Tail County highway maintenance workers Brody Bakken and Dennis Bosek developed an extendable culvert cleaner, known as the Otter Claw, to save time and enhance worker safety when cleaning out culverts. The skid steer attachment can extend up to 15 feet, allowing the operator to easily and safely remove large amounts of debris in as little as 10 minutes from culverts, ditches, around bridges, and other previously hard-to-reach locations.

The original design of the Otter Claw, which taps into the hydraulic system of the skid steer, included a rotatable grapple claw fabricated from exhausted steel plow cutting edges. Workers found its effectiveness somewhat limited by a repeated need to manually adjust the orientation of the claw using a removable pin to set a new position. To improve the strength, durability, and ease of use of the Otter Claw attachment, the Otter Tail County Highway Department sought and received a \$6,000 grant through the Local OPERA Program for an omnidirectional hydraulic swivel head.

### **Hydraulic attachments add strength, durability, and ease of use**

The team broadened the functionality of the Otter Claw beyond the grapple claw by developing additional hydraulic attachments for cleaning culverts, such as expandable paddle-like shovel heads

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#### **OPERA Funding**

\$6,000



*The Otter Claw has an omnidirectional hydraulic swivel head.*



*Maintenance workers often find culverts obstructed by tree branches, mud, rocks, plywood, and other garbage placed inside of culverts by animals or people.*

and flat scraping heads to fit culverts of different sizes. As the team refined these implements, it found it worked better to mount the culvert cleaning attachment at a different angle and position on its own base plate, which easily connects to the skid steer like the grapple claw attachment.

Maintenance workers often find culverts obstructed by tree branches, mud, rocks, plywood, and other garbage placed inside of culverts by animals or people. Once the Otter Claw has cleaned several feet of debris from each end of a culvert, it is often necessary to apply a high-pressure blast of water through the full length of the culvert with a jetter to fully restore the proper flow of stormwater.

The Otter Claw also can be used to place riprap alongside bridges, culverts, and roads adjacent to bodies of water to prevent erosion and other damage. Other uses include placing culvert sections during construction and handling storm-damaged trees. Using the claw to hold downed trees or logs makes it easier and safer to cut and load large pieces for removal.

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## **About OPERA**

The Local OPERA Program encourages maintenance employees from all cities and counties to get involved in operational, “hands-on” research. OPERA helps to develop innovations in the construction and maintenance operations of local government transportation organizations and share those ideas statewide.

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