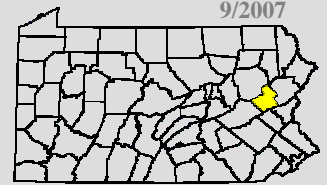


# Worksite in Focus

## Carbon County Spruce Road



### Project Overview:

Spruce Road provides an excellent opportunity to review a project that has been completed for several years to discuss successful practices and potential for improvement. Initial drainage work was completed in 2001, and Driving Surface Aggregate was placed on the road in 2003. "Before this project, Spruce Road was a mudhole that was actually lower than the stream in several places," explained Jim Clauser, Carbon Conservation District Manager. The road was a large contributor of sediment to the nearby stream because of its lack of drainage features, poor base composition, and frequent flooding.

### Raising Road:

Shale was used to fill the road up to 24" in places to provide a better road base and keep the stream out of the road. This practice was highly successful and was key to the road improvement project. The added fill also provided the much needed cover for installing additional crosspipes.



Photo 1. Spruce road was filled with up to 2' of shale in places to provide a better road base and elevate the road above the adjacent stream.

### New Crosspipes:

Before the project, only 3 crosspipes existed over the nearly mile long section of Spruce Road. These existing pipes were left alone (without headwalls) and create a useful contrast when compared to newly placed pipes. Seven new crosspipes were added in 2001 to reduce ditch erosion and disconnect road drainage as much as possible. Stone headwalls were placed around each of the newly placed crosspipes. The unprotected inlets of the three existing pipes serve as a constant source of sediment and could even clog pipes if a small slide were to occur. The new pipes and headwalls have been functioning well since placement in 2001. Photos 2 & 3 on the back compare two pipes, one existing without inlet protection, and one installed in 2001 with a stone headwall.

### Project Facts

Project:	Spruce Road
Project Owner:	Lower Towamensing
Watershed:	Borger Ck. to Lehigh River
Project Length:	4,600 feet
Date Completed:	drainage 2001 – DSA 2003

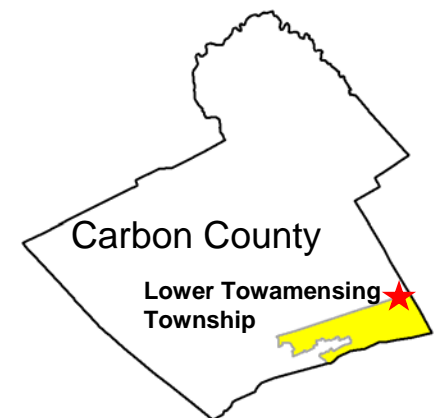
### Cost Summary:

Materials:	\$41,700
Equipment:	\$28,421
Labor:	\$ 504
Total:	\$70,625
In-Kind:	\$23,661

### For More Information:

Center for Dirt and Gravel Road Studies  
(814) 865-5355 [www.dirtandgravelroads.org](http://www.dirtandgravelroads.org)

Carbon Conservation District: (610) 377-4894





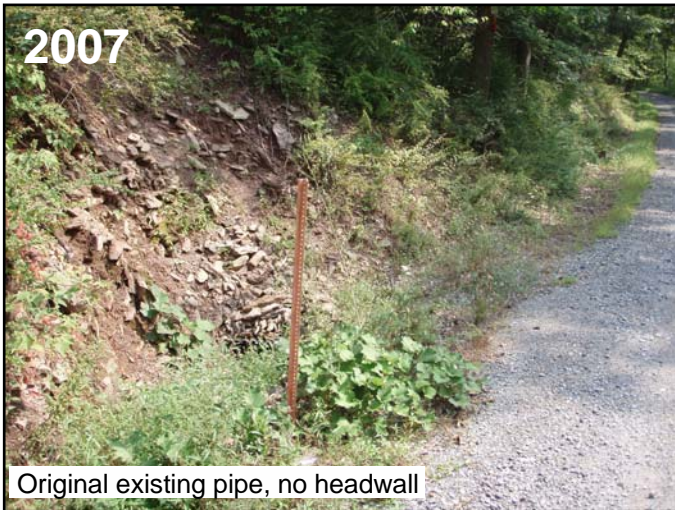


Photo 2 & 3. Six years after construction, the new pipe and headwall on the right is still stable. The existing pipe on the left was left alone. The unstable bank around the pipe inlet is a constant source of sediment and could clog the pipe if part of the bank were to collapse.

### Driving Surface Aggregate:

DSA was placed on Spruce road using a motor-paver in 2003. The road surface has not been graded or maintained in any way since it was placed. The driving surface itself is in excellent shape, however, it is beginning to suffer from lack of maintenance. Photo 4 illustrates a location where a small berm has formed preventing water from flowing into the ditch. Surface drainage that bypasses the crosspipe is eroding a channel into the DSA. Any aggregate, regardless of quality, will begin to erode under concentrated water flow. This problem can be avoided by grading the aggregate to remove the berm and allow drainage to enter the ditch and crosspipe. Several of the turnouts on this site are disconnected and no longer functioning for similar reasons.

### Lessons Learned:

The raising of the road elevation and addition of 7 new crosspipes greatly reduced stream pollution and improved the condition of Spruce Road. The headwalls built on the new pipes provided years of pipe and bank protection while requiring no maintenance. In looking back after 6 years, shallower pipe installations along with greadbreaks would have reduced the need for deep pipe inlets and helped to insure water does not run on the aggregate as in Photo 4. The addition of more turnouts or complete berm removal would also have reduced the amount of water that is trapped on the road surface. Overall, Spruce Road is a successful Dirt and Gravel Road project that is in need of some simple maintenance.

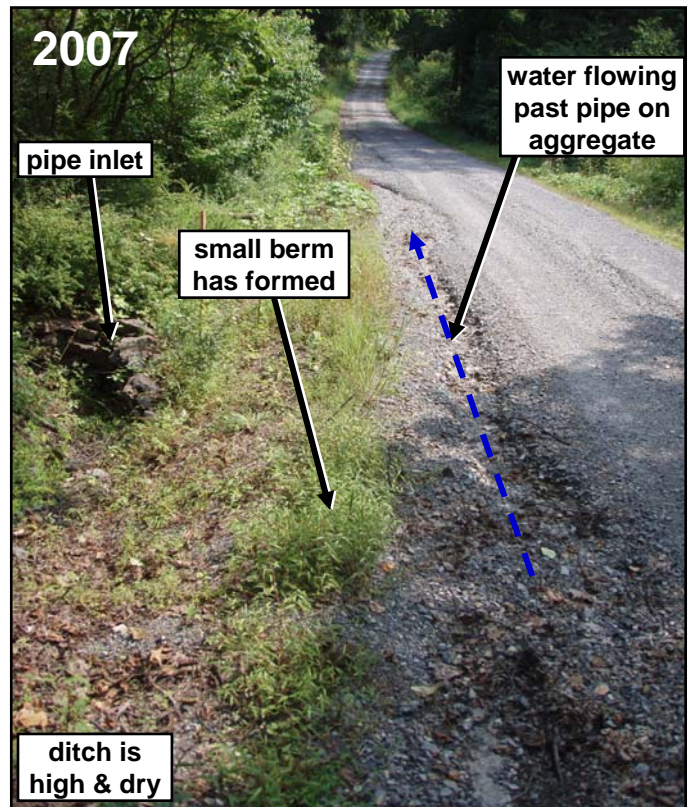


Photo 4. The importance of maintenance. A simple grading would have reestablished the ditch, got water into the culvert, and saved a lot of surface aggregate erosion.