

Recommendations for the Maintenance of Old Albany Post Road

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I was invited to Putnam County, New York at the request of the Old Road Society of Philipstown, who covered the cost of my travel and consultation fee. However, it should be understood that regardless of the financial sponsor of my trip, my evaluation and recommendations are unbiased and are representative of the same technical advice that would be given to municipal road maintenance professionals and conservation district staff involved in Pennsylvania's Dirt and Gravel Road Maintenance Program.

On the morning of Tuesday, October 7, 2008 a group of twenty or more concerned citizens met at the southern end of Old Albany Post Road. Among those present were myself, members of the Old Road Society of Philipstown, municipal officials from the Town of Philipstown, a representative of FEMA, and residents from the immediate area. The primary issue concerning the group involved conflicting opinions on whether or not to pave a 450' section of road up-slope of the stream crossing near the intersection with Sprout Brook Road.

The Environmentally Sensitive Maintenance Practices recommended here are proven maintenance techniques that both reduce sediment pollution and reduce the cost and frequency of road maintenance on unpaved roads. These practices have been used successfully on over 18,000 project sites throughout the seven different geologic regions of Pennsylvania, including counties along Pennsylvania's northern tier that are similar geologically and topographically to Putnam County, New York. In addition, these practices are not unique to PA, and many of these techniques are routinely used by transportation agencies across the country. For further information regarding Environmentally Sensitive Maintenance Practices, Pennsylvania's Dirt and Gravel Road Maintenance Program, or the Center for Dirt and Gravel Road Studies go to www.dirtandgravelroads.org or call toll free at 866-668-6683.

The five main principles of ESMPs on unpaved roads are:

- Avoid Concentrating Road Drainage
- Minimize Flow Volumes
- Reduce the Effects of Concentrated Drainage
- Prevent Surface Erosion
- Reduce the Cost and Frequency of Road Maintenance

The following pages outline a list of recommendations for the maintenance of Old Albany Post Road in the Town of Philipstown, New York using Environmentally Sensitive Maintenance Practices (ESMPs), based on site evaluations made on October 7, 2008. Site knowledge and input was gathered from all of those present and information was gathered from adjacent landowners when possible.

Section Number 1 – The unpaved portion of Old Albany Post Road up-slope of the intersection with Sprout Brook Road through to the intersection with Upland Drive.

Surface stabilization and urban style stormwater management is recommended for this section of the road for the following reasons:

- Dense residential development adjacent to the road restricts outlet options for road drainage and brings additional off right-of-way water to the road.
- This is a relatively long and steep stretch of road with no viable ditch outlet locations along the adjoining road corridor.
- A road right-of-way situation exists that forces the town to deal with road drainage within a narrowly defined road corridor (from ditch line to ditch line).
- Since the situation requires that road drainage structures such as pipe inlets must be located at the immediate edge of the cartway, drop inlets (catch basins) are the most likely inlet option since their low profile allows vehicles to drive over them while passing and road maintenance equipment to more easily work around them. Drop inlets are not recommended on unpaved surfaces, as they are prone to plugging during large run-off events and they often become too high to effectively drain the roadside ditch when the elevation of the aggregate surface that surrounds them lowers over time.
- An ideal road drainage system is a road that has no ditches, where the water that falls on the road surface is shed from the road in diffuse sheet flow, similar to natural drainage patterns. This, however, is not possible or practical on this section of roadway.
- Additionally, the glacial material that comprises Item 4 aggregate does not resist erosion as well as road materials found in other geologic regions. The town has done a good job of compacting the cartway (road surface), and traffic action continues to compact the material on an ongoing basis. However the ditch line located at the road edge does not receive the same repeated compaction. Therefore, when water from the cartway and from multiple driveways collects in the ditch, it is concentrated at the least stable point of the road. Combine this with a 450' continuous run down a slope of 7% to 12% with no ditch outlets and a compelling argument can be made to reduce erosion and cyclical road maintenance through surface stabilization.

Surface stabilization with urban style storm sewers (interconnected catch basins) is the logical option for the 450' section of unpaved road up-slope of the Sprout Brook Road intersection. While the most common form of road surface stabilization is asphalt pavement, which is the option currently favored by the town, other stabilization methods can be used to harden the wearing course of an unpaved road in order to resist erosion. The Center for Dirt and Gravel Road Studies does not advocate specific commercial products, nor does the Center do extensive durability testing on commercial products, but instead identifies classifications of products and materials as “non-polluting”, or environmentally safe, for use in unpaved road maintenance.

A representative of Soilworks, LLC has contacted Penn State and the Old Road Society regarding an environmentally safe copolymer product (Soiltac) designed to stabilize and

solidify the existing aggregate surface. Used correctly, polymer stabilizers will create a hard/erosion resistant driving surface that maintains crown on unpaved roads, and may provide an economical option to paving. Representatives of Soilworks, LLC incorporated their product with surface material samples taken from Old Albany Post Road in laboratory tests and feel strongly that this product will create a durable driving surface that will maintain its shape and elevation. According to company representatives a mixture of their copolymer and the surface aggregate will form a hard material that provides traction and will form hard ditches and aprons around catch basins. Recently Penn State began reviewing product data to potentially include the Soiltac product on its list of Approved Products for the PA Dirt and Gravel Road Maintenance Program. Depending on the economics, especially during times of skyrocketing oil prices, the use of this, or other alternative stabilization practices, may be a way the Town of Philipstown can address the various concerns of local residents, state regulatory agencies, and town budget managers.

In this section, the initial ~250' stretch up-slope of the bridge at Sprout Brook Road lays at an elevation that has seen previous flooding and may very well flood again if driveway culverts on the adjacent stream are not correctly sized and installed to handle significant future flood events, especially with continued residential development upstream.

While flood damage to hard surface roads is generally more severe when the flow runs across the road and less severe when the flow runs with the road (as is the case on this road), I would still recommend that the driveway culverts be addressed as part of a comprehensive upgrade/repair plan. Left unaddressed, it is likely that these pipes will again be an issue, and may create a situation that has the potential to damage any upgrades made to the road.

Section Number 2 – The portion of Old Albany Post Road from Upland Drive through to Indian Trail Road.

While I recommend surface stabilization, on the .1 mile length of road in Section Number 1, it is not necessary to harden the surface of the remaining unpaved portion of Old Albany Post Road with pavement or alternative methods in order to reduce sediment pollution and maintenance costs. Instead, I recommend that the Town of Philipstown adopt Environmentally Sensitive Maintenance Practices (ESMPs) when maintaining this portion of road as a means of achieving these goals. Specifically, I recommend the following practices:

- Eliminate road ditches when possible by removing all artificial berms, or grader lips, along the down-slope road edge that prevents surface drainage from sheet flowing off of the road to areas of lower elevation. If it is not possible to remove all roadside berms, remove as many sections of berm as is practical. Make the cut-outs as wide as possible to avoid concentrating flow at one narrow spot. *The artificial berms (grader lips) along Old Albany Post Road are very prominent. During my visit to the site I suggested to Roger and Frank that they remove them to establish sheet flow. I was informed by the road crew that they maintain the berms to prevent the road drainage from*

eroding the down-slope road bank and undermining the road edge. While I am not saying this is impossible, it is very unlikely that this type of erosion will occur if sheet flow is established. However, where a lack of suitable outlets forces long ditch runs, the ditch outlets should be stabilized with woody vegetation or stone to prevent scour (at crosspipes, turn-outs, or the first point beyond a bank where sheet flow is established).

- When ditches are necessary, use as many ditch outlets as possible to create shorter ditch runs (crosspipes for up-slope ditches and turnouts for down-slope ditches). In addition, steeper sections of road and areas with more off right-of-way influences (driveways, spring seeps, etc.) will need more frequent ditch outlets.
- The Town of Philipstown should consider enacting an ordinance that requires all new access roads and driveways to be designed to limit run-off before it reaches the municipal road. Some driveways will be more challenging than others, but a number of tools exist to accomplish this goal.
- Seek landowner buy-in to the idea of dispersing road drainage and enhancing infiltration. Promote the advantages of community cooperation and a “divide and conquer” stormwater management scheme by pointing out that the following will be reduced: costly and dangerous flood flows, costly road maintenance and repairs, and harmful environmental impacts. Ask residents to allow that road water be permitted to drain to their property if it will not do undue harm. *(A common hurdle to overcome when attempting to gain permission from landowners to outlet road drainage onto their property is the perception of what this will do to the property. Understandably so, many residents think this will lead to sediment plumes and scoured earth. This is this legacy of traditional road maintenance practices that concentrate drainage. The situation is compounded when ongoing development brings more off right-of-way water to the road and the number of ditch outlets remains the same or decreases during the same period. When approaching landowners regarding permission to outlet drainage to their property, be prepared to explain that by dividing drainage (creating shorter ditch runs) the amount of water and erosion at any one outlet is reduced. Explain that more outlets on a length of road mean less water and impact at any one point.*
- Use innovative practices such as Shallow Crosspipes, Grade Breaks and Through-the-Bank Pipes to control surface erosion and material loss, and to avoid high maintenance tail ditches. *(see attached Technical Bulletins)*
- The Center for Dirt and Gravel Road Studies recommends establishing between 4% and 6% side-slope on unpaved roads. On the day I visited the crown on Old Albany Post Road looked sufficient to be effective. Roger Chirico, Philipstown Superintendent of Highways, said that they shoot for a 6% side slope when they do maintenance grading. This road shape should be enough to provide for effective road surface drainage.
- If the town has access to a vibratory roller, and has not already adopted the practice of post grading compaction, I recommend adding this to their unpaved road maintenance routine. This practice yields the best results when the road surface is damp. Compacting newly graded aggregate will more than pay for

itself by lengthening maintenance cycles and reducing the loss of surface material.

- Also, to avoid inadvertently removing crown and scraping valuable road material to the ditch (where it can be washed away during winter thaws and heavy Spring rains), the Town of Philipstown should use shoes on their snowplows when plowing Old Albany Post Road, if they are not doing so already.

In conclusion, with changing fiscal, political, and environmental challenges faced by municipalities trying to provide effective road maintenance, as well as growing pressure and demands from residents and motorists, all potential road maintenance schemes should be kept open as available options for municipal road maintenance crews. Since no two roads have identical situations, maintenance programs should differ from road to road, and the factors determining the choice of maintenance program should differ also. While the residents along Old Albany Post Road have different ideas on what maintenance scheme should be employed by the town, and the town has its own plans, I encourage the different interest groups to work together to find solutions that are acceptable to all those involved. Neither safety nor history is my area of expertise. However, just as financial and environmental factors need to be considered when developing a road maintenance program, so too should these other factors important to the community. Since correctly implemented Environmentally Sensitive Maintenance Practices will reduce road maintenance costs and environmental concerns related to unpaved roads while allowing the road to remain unpaved, I would suggest that the Town of Philipstown implement these practices when maintaining the dirt and gravel portion of Old Albany Post Road.

The Center for Dirt and Gravel Road Studies is available to do more detailed maintenance recommendations if the Town of Philipstown is interested in getting a more detailed project plan using ESMPs. Since we are a public entity, the fee for this service is very reasonable. Also, the Center puts on approximately ten two-day Environmentally Sensitive Maintenance Training courses a year for road maintenance professionals at various locations throughout PA. The courses are open to road maintenance personnel from states bordering PA. For more information contact Kathy Moir at 1-866-668-6683, or email Kathy at kam16@psu.edu.