

## **2014-2015 Loudoun County Gravel Road Maintenance Report**

### **Virginia Department of Transportation**

#### **BACKGROUND**

Loudoun County has about 280 centerline miles of unpaved roads, highest of any County in the Commonwealth. Beginning in the middle of 2013, VDOT started receiving a lot of feedback on the condition of gravel roads in Loudoun County through Loudoun County Board of Supervisors, residents, and civic organizations.

While the routine maintenance efforts continued to address the concerns, the severe winter aggravated the situation. As frustration grew, Loudoun County Preservation and Conservation Coalition (the "Coalition"), comprised of about 17 civic organizations pursued a legislative action in General Assembly for additional funding for maintenance of gravel roads in Loudoun County. Loudoun Residency has typically budgeted approximately \$900K per year for unpaved road maintenance, but has spent closer to \$1.6M a year during last couple of years which is indicative of the flexibility that exists as part of the budgeting process to meet identified needs. Hence, dedicating specified amount of funding to gravel roads only was not necessary. However, in the 2014 Virginia General Assembly (GA) session, HB-416/SB-397 legislation was adopted that requires VDOT to report annually to Loudoun County and the GA on the efforts on maintenance of gravel roads in Loudoun County. This report constitutes fulfillment of this requirement.

#### **2014-2015 GRAVEL ROAD MAINTENANCE ACTIVITIES IN LOUDOUN COUNTY**

Whereas the communities continued to search for consensus on the type of, if any, hard-surfacing treatment they would like on their gravel roads, it became apparent that we needed to step up our efforts in the meantime. In May of 2014, Northern Virginia District Administrator (DA) Helen Cuervo directed the Leesburg Residency to undertake a focused repair and restoration project to address the top 11 roads on a priority basis. With the help of District Materials Engineer two test sections about 300 feet long each were also selected for installing Cement Treated Aggregate (CTA) as pilot. As the wet spring threatened completion of this project in a timely manner, the DA authorized using staff and resources from adjacent residencies. Fairfax and Prince William Residencies responded along with District Bridge section in offering personnel. Loudoun County provided its support by providing one-time additional waiver of its landfill fees for use by gravel road maintenance activities. Details of activities undertaken during FY 2015 are listed below.

#### **11 Priority Roads Maintenance Project**

- About 50 centerline miles of 11 priority roads completed with a set aside funding over and above routine maintenance. As of April 2015, about \$2.52M, including hired and

VDOT equipment, were spent on these 11 roads, incorporating best practices for rural roads maintenance – rebuilding the base, addressing drainage where possible, proper grading and crowing, vegetation clearance, etc. This focused restoration project included performing several of these actions, while working within the existing right-of-way:

- Clean existing drainage pipes and replace if needed
  - Perform ditching operations as needed and dispose of spoils; Obtain utility and environmental clearances for ditching operations as needed
  - Install erosion controls per Environmental Sections recommendations
  - Excavate and reconstruct any unstable base sections of roadway where needed
  - Trimming the overgrown and overhanging vegetation
  - Hauling away the debris from ditch clearing and tree trimmings to landfill
  - Grade and properly crown roadway base
  - Compact graded base using rollers
  - Apply four inches of number 21-A stone. Grade and compact as necessary and properly crown
- As a continued effort to enhance our knowledge, a full-day training on Maintenance of Gravel Roads by an expert from University of Maryland was arranged for Supervisors and Managers in May and another half-day training for all residency staff in August.
  - Collaborative and focused effort – About 21,000 person-hours of maintenance crew time; 17 crew members from other Area Headquarters and Residencies in Northern Virginia District were brought in to help local AHQs on 11-roads projects indicative of “One VDOT” in tackling the gravel road issues; Use of VDOT owned as well as hired equipment for grading, rolling, ditching, and hauling, tree trimming and removal.
  - Over 37,000 tons of 21A stone used from various quarries with some very promising results.
  - Over 42,000 gallons of calcium chloride applied for dust control.
  - Approximately 7,900 tons of debris related to the 11 gravel roads was hauled to Loudoun County Landfill, well over VDOT’s approved fee waiver for 5,580 tons for FY15 (for a total of approximately \$346K). Recognizing the special need for the priority project, Loudoun County granted additional waiver of \$393K (about 6,300 tons) for the remainder of FY15 to cover the overage and forecasted need for regular gravel road maintenance. This is indicative of the County’s commitment and support on maintenance of gravel roads.
  - Provision of environmental clearances locally for ditching efforts within the right-of-way allowing for quick turnaround.

- Pilot projects with Cement Treated Aggregate (CTA) application at two test sites that were maintenance hotspots – Hughesville Road and Colchester Road as alternative to hard surfacing while maintaining rural rustic characteristic. So far, these test sections have not required any significant attention as these locations used to. If these work out well over the longer term and through winter weather, more applications may be taken up in coming years.
- Several field visits by VDOT District management and elected officials; regular outreach and communication. Many positive comments and feedback from residents and elected officials.

The enhanced maintenance work was performed of the following roads:

1. Oatlands Road (Route 650)
2. Hughesville Road (Route 725) between routes 722 & 704
3. John Wolford Road (Route 694) between routes 287 & 681
4. Shelburne Glebe Road (Route 729)
5. Old Wheatland Road (Route 698) between routes 9 & 681
6. Purcellville Road (Route 611) between routes 9 & 711
7. Greggsville Road (Route 622) between routes 611 & 630
8. Rickard Road (Route 692) between routes 287 & 681
9. Foggy Bottom Road (Route 626) between routes 779 & 759
10. Georges Mill Road (Route 852)
11. Old Waterford Road (Route 698) between routes 665 & Leesburg Town Limits

Within months of completion of these roads, not only the complaints went down significantly, VDOT also received many positive notes from residents and elected officials. One recent email from the Coalition read...

***I had two independent comments by two residents on Jeb Stuart, both who happen to be ex military officers.***

***They said the grading work was outstanding, some of the best they had ever seen anywhere in their experience.***

***One added that this operator was a "real master of the art."***

***In general many have noted the improvement over the last two years. The good effort has not gone unnoticed.***

Another email from a resident read...

*Thank you for your sustained effort to evaluate and improve the condition of Oatlands Road in Aldie, VA. Last winter, Oatlands Road was in appalling shape and unsafe to drive. Since April 2014, however, you and your VDOT crew members have worked long and hard to regrade, restore, and then maintain Oatlands Road in a safe condition. Residents of Oatlands Road agree that the road is in better shape than they have ever seen it.*

*Would you be kind enough to convey a special thank you to VDOT crew member Terry for doing such a fantastic job with her giant road grader?*

## **GRAVEL ROADS MAINTENANCE PRACTICE IN RECENT YEARS**

VDOT Maintenance staff is committed to providing safe and passable gravel roads for a typical passenger vehicle. While significant resources were dedicated to the 11 priority roads during the earlier part of FY15, routine maintenance of other gravel roads have also continued. VDOT Loudoun Residency has spent about \$797K through May 2015 on routine maintenance of gravel roads from the regular maintenance budget. This is indicative of VDOT's commitment to continue to focus on the needs of gravel roads. Typical gravel road maintenance practices in the Northern Virginia District can be categorized as described below:

### ***Routine Maintenance Activities***

The following actions are part of VDOT normal response to gravel road maintenance:

- Spot vegetation trimming and cutting of grass.
- Spot ditch maintenance to alleviate minor drainage problems.
- Replacement of failing pipes.
- Spot replacement of aggregate (3 times per year).
- Grading to maintain a smooth surface (3 times per year).
- Spot Dust control.

### ***Gravel Roadway Rehabilitation***

The task below are considered to be more rehabilitative due to more extensive work involved and this was the degree of work performed during the 11 gravel roads project of 2014. Rehabilitation can help reduce the number of routine maintenance actions on a gravel road for a longer period of time.

- Vegetation trimming and tree removal along more than 500 feet.
- Ditching and hauling spoils along more than 500 feet.
- Applying aggregate, grading, and compacting for more than 500 feet.
- Adding calcium chloride to aide in compaction of aggregate along more than 500 feet.
- Applying a tar & chip surface to areas prone to wash boarding, limited to less than 500 feet.
- Adding stone or asphalt to ditch lines that are prone heavy erosion.

### ***Gravel Roadway Reconstruction***

These items are considered to be more reconstructive in nature due to the amount of work and time involved. Such reconstruction would normally require hiring equipment and/or contractor normally not available within routine maintenance resources.

- Lime stabilization of clay sections.
- Stabilization of failing areas by adding cement treated aggregate (CTA).
- Installing new drainage pipes and establishing outfall ditches.
- Undercutting of clay sections of roadway.

While the routine maintenance is accomplished within the operational budget of the Residency, rehabilitation and/or reconstruction requires additional efforts. To undertake multiple gravel roads rehabilitation/reconstruction simultaneously, adequate planning becomes necessary, including community outreach, support and consensus of stakeholders, coordination with environmental and drainage sections, etc.

### **NEXT STEPS**

#### ***Preserving Investments***

VDOT maintenance staff will continue to perform routine maintenance on all gravel roads to ensure safety of motorists on these roads. To ensure that the investment on the 11 roads continue to yield fewer maintenance calls, the AHQ staff has recommended addressing some recurring hotspots with additional spot treatments, such as tar and chip, enhanced ditching, or additional drainage improvements. To further assist the two western AHQ's (Hillsboro and St. Louis), the other two AHQ's (Arcola and Leesburg) have been directed to assist with routine maintenance activities on 10 gravel roads from each of these jurisdictions this year. This is again indicative of VDOT's flexibility in allocating resources at the District level.

#### ***Continued Rehabilitation***

VDOT also plans to utilize hired equipment and/or contractor to augment regular maintenance staff with a set aside funding of \$2.1M to undertake a rehabilitation effort this year similar to 11 roads in 2014. Based on recurring routine maintenance efforts and feedback from the community and the elected officials, the Leesburg Residency has identified the following roads for consideration:

1. Foundry Road (Route 723)
2. Hampton Road (Route 738)
3. Woodtrail Road (Route 700)
4. Colchester Road (Route 730)
5. Telegraph Springs Road (Route 611)
6. Jeb Stuart Road (Route 630) from RT 734 to RT 730
7. Hurley Road (Route 703)
8. Piggott Bottom Road (Route 711)

9. Quarter Branch Road (Route 855)
10. Red Hill Road (Route 617)
11. Hibbs Bridge Road (Route 731)
12. Leith Lane (Route 733)
13. Nixon Road (Route 697)
14. Dunlop Mill Road (Route 770)
15. Mt. Gilead Road (Route 797)

The plan is to utilize contractors to assist VDOT applying the lessons learned and best practices from last year's priority project. Although the goal is to complete as many roads on the list above as feasible this year, VDOT is confident that the first 10 roads will be completed this calendar year. The use of contractors will allow the VDOT staff to focus more on routine maintenance activities.

A summary of overall effort on gravel road maintenance, including routine, the top 11 roads in calendar year 2014 and initiation of work on the priority roads in calendar year 2015 is summarized below:

- Over 23,000 person hours of labor
- Approximately 51,700 tons of 21A stone used
- Approximately 48,260 tons of calcium chloride for dust control

### ***Alternative Materials***

VDOT intends to engage Virginia Center for Transportation Innovation and Research (VCTIR) in evaluation of other alternative materials and treatments. VDOT will have VCTIR evaluate the two pilot CTA segments installed by the Residency staff. VDOT also plans for VCTIR to work with the Residency to install additional test beds under controlled experimental design. The goal of these efforts will be to assess effectiveness of alternative treatments in reducing frequency of maintenance calls, maintaining improved ride quality, and developing guidelines for appropriate application of successful treatments.

### **CAPITAL IMPROVEMENTS**

Gravel roads cannot be expected to be maintained to provide same level of ride quality as paved roads. There are bound to be unevenness and rough surfaces. They are more prone to higher level of wear and tear from growing traffic volumes, speeding vehicles, lack of adequate drainage facilities, etc. Hard surfacing of gravel roads is possible under Rural Rustic Program preserving the rural characteristics of gravel roads. However, such treatments cannot be undertaken under maintenance program. They need to be programmed as capital improvements using secondary six year plan funds as prioritized and approved by the Loudoun County Board of Supervisors. Any gravel road with over 50 vehicles per day is eligible for receiving capital improvement funds for hard surfacing and also, per recent legislation, for ancillary improvements including drainage with or without hard surfacing.

**SUMMARY**

Significant gravel road maintenance activities were undertaken during this fiscal year. With the infusion of set aside funding, a dedicated restoration project on 11 priority roads yielded very positive outcome. The lessons learned and some of the techniques employed for this project would be used on other roads in the coming years to help maintain the gravel roads in a way that would reduce repeated attention to them over shorter periods of time.

The result of great team work, focus, and leadership by Leesburg Residency Maintenance and positive communication with the elected officials and the Coalition has been very well received in western Loudoun County.