



This engineering analysis report is in response to the letter regarding Poplar Hill Road from Mr. Greg Deaver, Chair of Rustic Road Advisory Committee, dated December 1, 2014. The Division of Transportation Engineering (DTE) of Montgomery County Department of Transportation (MCDOT) conducted site visits on January 23 and March 20, 2015 for assessment of the existing conditions. ***MCDOT will continue to provide winter maintenance including reasonable snow and ice control. In addition MCDOT will provide emergency repairs such as filling major pot holes and removing downed trees.***

To address the concerns identified in the letter from Mr. Deaver, MCDOT has provided options for repairs to the road. The repairs must be made in accordance with the Rustic Road guidelines and Dedicated but Unmaintained (DBU) Roads program. Budgetary cost estimates are included for each of the roadway items.

Traffic Barrier Gate

A barrier gate to prevent vehicular access to the portion of the Poplar Hill Road beyond the last driveway was requested. A 16 feet long tubular steel barrier gate is proposed. The gate would have steel posts at each side of the road that support a horizontal barrier gate with a 180 degree of swing. The total cost of the steel barrier gate including material and labor is \$2,125.

DOT Recommendation: Install traffic barrier gate.

Traffic Guard Rails

For public safety along each side of the creek, guardrails were requested. On the north side of the creek, approximately 100 feet of a single sided W-beam guardrail with Type-A end treatments are estimated to cost \$2,800. On the south side of the creek, approximately 250 feet of single sided W-beam guardrail with Type-A end treatments are estimated to cost \$5,500. The guardrails on the south side of the creek are needed to protect motorists on the adjacent roadway.

DOT Action Completed: Traffic barriers installed in May 2016 on the south side of creek.

Roadway Grading Beyond Proposed Traffic Barrier Gate (Past House No. 14225)

Approximately 180 feet of the roadway beyond house No. 14225 is in poor condition with deep gullies in the road. To repair this section of the roadway, grading with 4" aggregate is recommended. The cost is estimated at \$3,503.

DOT Recommendation: Regrade section of the road with aggregate.

Turn-Around Area

An area approximately 24 feet wide by 15 feet long in front of the proposed traffic barrier gate will be regraded for providing the turn-around area. To repair this section of the roadway, grading with 4" aggregate is recommended. The cost is estimated at \$572.

DOT Recommendation: Install a turn-around area in front of proposed gate. d

Storm Drain Construction

To increase the service life of the road surface, storm drain is recommended at four locations. The four locations for storm drain are indicated along the road in the attached aerial photo maps.

One storm drain location is approximately 60 feet west (towards the creek) from the driveway to House No. 14225. The storm drain will include an end section inlet on the upstream side connected to a yard inlet on the downstream side of the road. A flat bottom grass ditch will be constructed from upstream to the end section and yard inlet on each side of the road. The yard inlet and end section will be connected by 15" Reinforced Concrete Pipe (RCP). The outflow from the yard inlet will be an 18" High Density Polyethylene (HDPE). The 18" HDPE pipe will be 50 feet long to outfall into an existing naturalized dry swale along the south side of the road. The outfall from the 18" HDPE pipe will include a HDPE end section.

The second location for a storm drain is at located 1,550 feet south from the intersection of Pave Trail and Poplar Hill Road. The location is a relative low point along the road that causes water to pond on the road. An end section on both sides of the road will be connected by 15" RCP. In addition, a two feet wide by 80 feet long flat bottom grass ditch will be constructed on each side of the road for an effective conveyance of runoff into and away from the end sections. The outfall from the downstream end section will include a riprap plunge pool.

The third location for a storm drain is at located 1,200 feet south from the intersection of Pave Trail and Poplar Hill Road. The location is also a relative low point along the road. An end section on both sides of the road will be connected by 15" RCP. In addition, a two feet wide by 100 feet long flat bottom grass ditch will be constructed on each side of the road for an effective conveyance of runoff into and away from the end sections. The outfall from the downstream end section will be a riprap plunge pool.

The fourth location for a storm drain is at located 700 feet south from the intersection of Pave Trail and Poplar Hill Road. The location is also a relative low point along the road. An end section on both sides of the road will be connected by 15" RCP. In addition, a two feet wide by 100 feet long flat bottom grass ditch will be constructed on each side of the road for an

effective conveyance of runoff into and away from the end sections. The outfall from the downstream end section will be a riprap plunge pool.

The fifth location for a storm drain is at located 250 feet south from the intersection of Pave Trail and Poplar Hill Road. The location is also a relative low point along the road. An end section on both sides of the road will be connected by 15" RCP. In addition, a two feet wide by 80 feet long flat bottom grass ditch will be constructed on each side of the road for an effective conveyance of runoff into and away from the end sections. The outfall from the downstream end section will be a riprap plunge pool.

The cost estimate for installation of the storm drain system is \$14,250.

DOT Recommendation: Install storm drain at all five locations.

Options of Pavement Design/Maintenance

Four pavement options are provided for Poplar Hill Road from Pave Terrace to the location of the proposed traffic barrier gate past the driveway to House No. 14225. The area for proposed roadway re-grading is 14 feet wide by approx. 2,600 feet of long. Also, included is 22 feet wide by 15 feet long for a proposed turn-around area past house No. 14225.

1. Gravel

The cost estimate for re-grading the roadway with a graded aggregate base is \$26,500.

The cost computation is based on the assumption that 40% of the roadway would require new gravel to fill in the existing ruts and pot holes. The typical maintenance frequency is once per year.

2. Chip Seal

The chip seal option creates the appearance of a rustic road. This option applies liquid asphalt and then applies fine aggregates. Prior to application of the chip seal, the road will be graded to remove any ruts or pot holes. The estimated cost is \$36,000. Typical maintenance frequency of the road is every three to four years. MCDOT-Division of Highway Services does not recommend this option due to the anticipated high amount of rutting that will occur.

3. Aggregate with Chip Seal on Surface

This option provides a re-grade of the road with graded aggregate base. The chip seal can then be applied to the re-graded aggregate road. The estimated cost is \$49,000. The typical maintenance frequency is seven to ten years.

The Division of Highway Services recommends this option due to a longer lasting pavement.



4. Hot Mix Asphalt (HMA) with Chip Seal on Top

This option is composed of 3” layer of HMA Surface and 3” layer of HMA Base with a chip seal treatment on top. The estimated cost is \$148,000. Typical maintenance frequency of the road is 20 years.

DOT Recommendation: Install option 3. Aggregate with Chip Seal on Surface