

August 17, 2017

Mr. Frank Stroman
Road Commissioner
Pinnacle Mountain North Association
Nannytown Road
Union Mills, North Carolina

Re: Pinnacle Mountain North – Gated Entrance Site

Dear Mr. Stroman,

On August 16, 2017, a site evaluation was conducted with you, Mr. Fred Mansperser and Wayne Watkins of Odom Engineering PLLC. The inspection was conducted at the site of the new entrance gate installed near the beginning point of the Pinnacle Mountain North property.

The current site conditions were evaluated from a three (3) point perspective; 1) site usability including the ability for turnaround requirements such as emergency and public service vehicles as well as residential traffic, 2) Site slope stability including the existing vertical earthen embankment and 3) Safety from the perspective of person or vehicle safety if the embankment were to fail while occupied.

Item One: The current turnaround area is approximately 16 feet wide and 17 feet in depth with tight radius connecting to the existing roadway. At the back of the turnaround area is a vertical soil embankment approximately 8 feet in height. The area as currently constructed would not meet the minimum standards for a NCDOT "T" turnaround. Standard size vehicles are able to turnaround at this time, but a larger emergency vehicle would not be able to turnaround. A re-design of the turnaround to NCDOT "T" type is one option. It is likely that the design would require additional grading of the rear and side embankment areas and/or the design of a retaining wall structure.

Item Two: There is evidence of former soil slope failure in the adjacent area located directly to the left while facing the turnaround. The area directly above the vertical embankment is wooded mountain side at approximately 2:1 slope. The drainage area above drains directly to the embankment face. The soil wall was probed to determine soil density and soil makeup. The lower embankment consists of a mixture of rock and soil/rock. From base elevation upward for approximately 4 feet the mixed soil/rock condition exists and appears dense with the probe entering 2-3" or less. The remaining vertical cut area – from three to four feet to top of cut was a mix of soil types and organic material. The probe penetrated 12" or more in these areas and the soils were noted as wet from recent rainfall. Many large trees are located at the top of the vertical embankment area placing a load on the unsupported vertical cut.

It is our opinion that the possibility of slope failure in this area is likely without re-grading of the area to reduce slope angle or the construction of a retaining structure.

Item Three: Personal and vehicle safety should be considered as the current vertical slope presents the possibility of impact in the event of slope failure. Additionally, the existing slope on the opposite side of the road is very steep and long slope length. The existing wooden guard rail offers a good "visual clue" of the steep slope below. The condition and structural integrity of the guard rail should be monitored along with the stability of the slope below to adequately support the roadway above.

Stormwater drainage should be directed away from steep slopes especially in areas where roadways are narrow or shoulder width is limited. Maintaining dense vegetative groundcover is another important factor to protect steep graded slope areas.

One additional consideration would be to explore the possibility of moving the new entrance gate to a location better suited for issues of use discussed above. The older gate located approximately half way into the property provides a better location given the area provides a better road width and gentle slope conditions on both sides of the road. If the property Owner's associations can work in cooperation to use this location site grading and safety issues may be lessened.

Please see attached photos taken of the project areas during inspection. We appreciate the opportunity to work with you on this project and look forward to assisting you with your engineering needs in the future.

Sincerely,



David Odom, P.E.
Odom Engineering, PLLC



Existing turn around area at Pinnacle Mtn. North new entrance gate location.



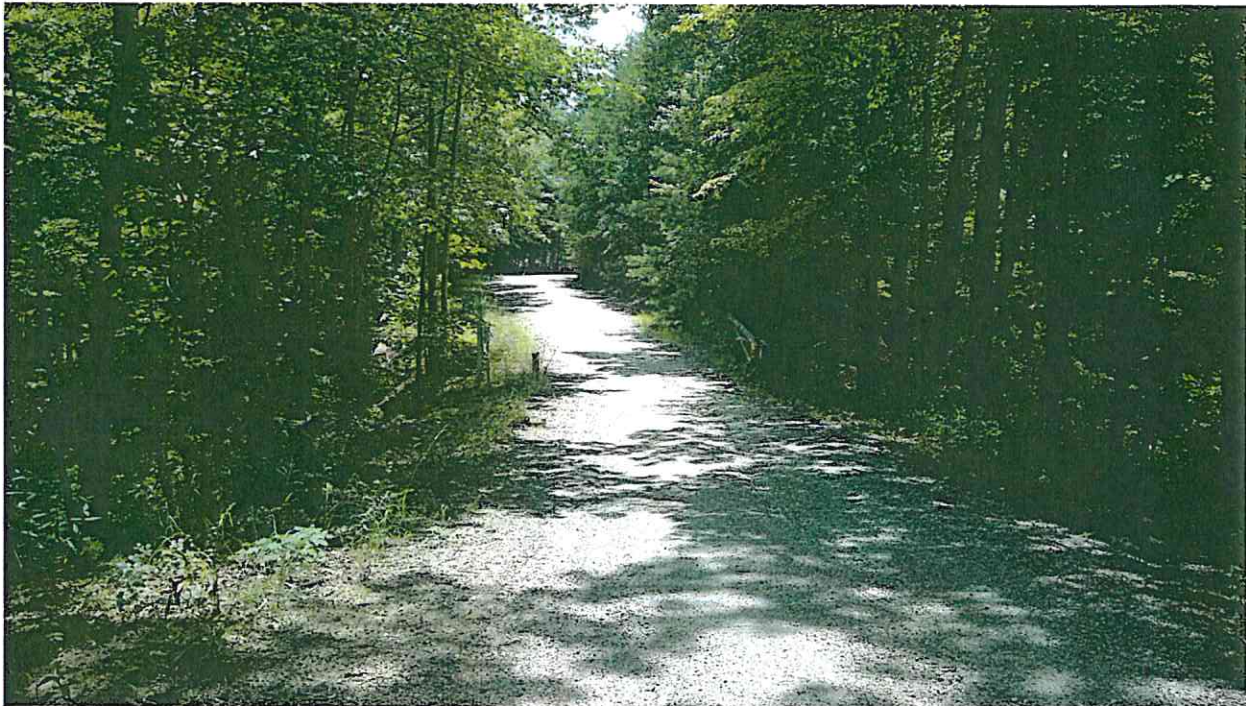
Existing turn around area at Pinnacle Mtn. North new entrance gate location.



Turn around rear cut embankment.



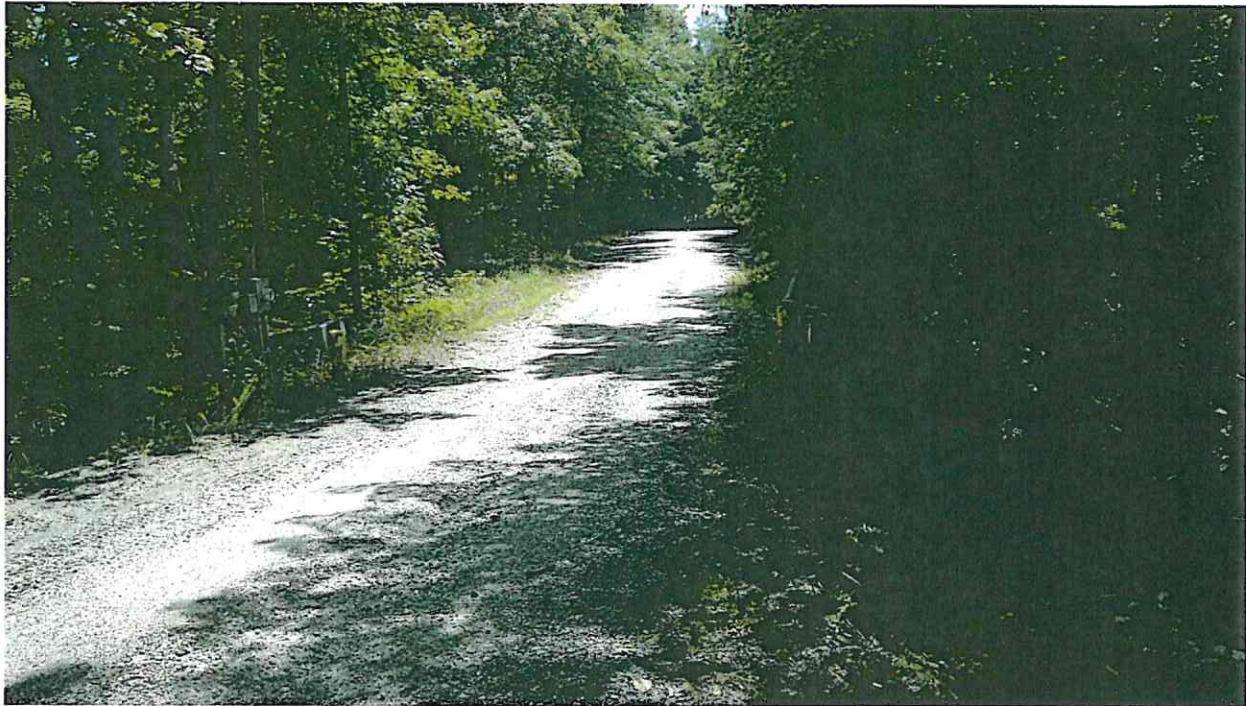
View of new entrance gate – Pinnacle Mountain North Association.



Existing entrance gate area (older entrance – located prior to Pinnacle Mtn. North Assoc.)



Existing entrance gate area (older entrance – located prior to Pinnacle Mtn. North Assoc.)



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