
April 18, 2007

Asheville Planning and Zoning Advisory Board

Re: Comments on draft steep slope ordinance

Thank you for the opportunity to comment on the draft steep slope and ridgetop ordinance for the City of Asheville.

Geotechnical Analysis

The threshold for geotechnical analysis in the current draft must be lowered from 50% to 25%. Director Shuford's cover memo cites data from the North Carolina Geological Survey (NCGS) for the proposition that the primary slope trigger point for landslides is slopes at or above 50%. In truth, a lower threshold is needed to ensure that the majority of landslide initiation points are captured and that the regulation reflects variations in slope across larger lots.

NCGS maintains a database of historical landslides they have identified pursuant to their work. For some of those landslides records, NCGS has identified the point at which the slide initiated and has taken accurate measurements of slope at that point with a device known as an inclinometer. Other landslide records in the database include slope statistics for initiation points that are based on other less-accurate and less-reliable measurements of slope. Based on this data, a statutory threshold of 35% (approximately 20°) slope would be needed to include the initiation points of nearly all of those historic landslides for which very accurate (inclinometer) slope measurements are available. The hazards to life and property associated with landslide hazards are too great to settle for a solution that fails to address even a significant percentage of landslide prone areas. Thus, at a minimum, the ordinance must apply to artificial slope construction on natural slopes in excess of 35%.

To be truly effective at addressing the landslide hazards associated with steep slope development, however, a threshold of 25% (approximately 15°) is required.

When the full database of NCGS landslide records is considered, which includes records where slope is measured by less-accurate computerized mapping techniques, a threshold of 25% is needed to ensure that all or nearly all initiation points for historic landslides would be included in the scope of the ordinance. For example, a threshold of 25% would be needed to capture 94% of all historic slides in Macon County. Similarly,

in Watauga County, 95% of slides originated on slopes over 25% and only 75% of historic landslides originated on slopes over 45%. The principal difference between these statistics and those cited above is that these numbers include historic landslides for which less-accurate measurements of slope were used, which draw upon computerized mapping of slopes instead of site-specific measurements of the point of origination with an inclinometer. The landslide records based on computerized mapping of slopes are less accurate because they reflect an average measurement of slope over a larger area and do not necessarily reflect the slope at the actual point of origination for the landslide.

Importantly, the technique for measuring slope required by the draft ordinance more closely resembles the less-accurate computerized-mapping technique than the more accurate inclinometer method. The ordinance requires that slope be measured from the highest point on a lot to the lowest point. That measurement of average slope across the lot does not exclude the possibility that smaller areas within the lot will have a slope steeper than the average slope across the entire lot. When average measurements of slope are used, a lower threshold is needed to ensure that smaller areas within the lot having steeper slope are included and considered in a geotechnical analysis for the lots.

Structure Height and Depth

In the most recent draft of the ordinance, section (g) has been amended to delete language requiring a 50 foot setback for structures that take advantage of the additional height (12 ft uphill/20ft downhill) provided for using low Light reflectivity Value materials. The ordinance must be amended to restore the 50 foot setback provision. Low LRV materials are important and should be encouraged. Other jurisdictions make use of such materials mandatory in critical viewsheds. Use of low LRV materials alone is not sufficient, however, to offset the visual impact of an additional story in allowable height. The 50 foot vegetated setback is necessary to reduce the visual impact of the additional height.

Density Bonuses

The current draft of the regulation made an important and detrimental change to the density bonus provisions in section (j)(3). That provision allows a density bonus of up to 60% if structures are clustered in less sensitive areas. In the revised draft, the section goes on to identify less sensitive areas as including “previously cleared areas, such as logging roads and pastures.” This new sentence makes little sense in light of the policy objectives for the ordinance and provides a powerful incentive for developers to circumvent the provisions of the ordinance by clearcutting a slope before initiating the development process.

A core purpose of the ordinance is to ensure safety from slope failures. Cleared areas are more susceptible to landslides and other slope failures. Removal of vegetation significantly increases the risk of slope failures. Trees stabilize the soil with their root systems and remove moisture that would otherwise reduce the resistance of a slope to

failure. The root system of existing vegetation adds structural strength to the soil. The NCGS includes the structural support provided by root systems in their calculation of soil resistance to slope movement. Without the additional support provided by root systems, more areas would be categorized by NCGS as having a higher probability for slope failure. Revegetation with grass and shrubs does not restore the same structural strength to the soil.

In addition, logging roads can be a risk factor for slope instability. The Lands Creek Debris Flow in Swain County initiated where a private logging road crossed a hillside hollow. The resulting debris flow destroyed a mobile home and the chlorinator for the Swain county water supply. Similarly, the Starnes Cove debris flow originated along a logging road and flowed down hill, destroying a home. As with roads built for development, logging roads involve grading that disrupts natural slopes, alters the natural hydrology of a site, and contributes to slope instability.

Because logging is exempted from stormwater and erosion sediment control standards, developers have powerful incentives under current law to clear land and cut roads under the guise of logging, before implementing a development approval process with the city. Similarly, the grading restrictions and vegetation requirements that this draft ordinance provides, while critically important, are easily circumvented by “logging” a site in advance of a development proposal. The incentive to circumvent the law in this way is only enhanced by providing a density bonus for construction in “previously cleared” areas. Developers have adequate incentive to build in previously cleared areas and areas served by logging roads even without density bonuses, because they avoid the cost of clearing virgin land and grading new roads. Rather than contribute to incentives to clearcut steep slopes in advance of development projects, this ordinance should be structured to provide disincentives for such activities, perhaps by further limiting density on parcels that have been logged, anywhere in the parcel, within the five years prior to seeking development approval. On steep slope lands, such a policy is justified by the added threat of slope failure in areas that have been cleared of woody vegetation.

In general, the density bonus provisions of the draft ordinance are too generous. First, a maximum increase of 60% is far too great. Because of all the policy considerations that support this ordinance, including slope failures, sedimentation and viewsheds, a 60% increase in density above the maximum density otherwise allowed is too great. Second, the vegetative screening described in section (j)(3)(c) of the ordinance should be mandatory, not an option for density bonuses. Screening of these high priority viewsheds is too important to leave to bonuses. Finally, density bonuses for clustering structures on lower slopes are too generous. In fact, for construction of parcels with slope between 15% and 20%, density bonuses would be automatic.

Sincerely,

Austin DJ Gerken