

Reevaluating the steep slope debate with a more scientific approach

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The quality and quantity of hillside development has aroused a vigorous and intense debate in Western North Carolina, with many people using the term "steep slope" as a catchall phrase to describe what is perceived as "improper" mountain development.

Such generalization is overly simple. Rather than the incline, what is often most upsetting are the environmentally damaging land-clearing disturbances that result in erosion, run-off and sedimentation that can harm local water resources. As upsetting and emotional for many is the negative impact on community views (view sheds), particularly as related to construction near ridge lines or predominant peaks that often is further exposed by clear-cutting of trees and under-story vegetation.

Area citizens, seasonal residents, real estate professionals, builders, developers, design consultants, politicians, environmentalists and other groups representing a variety of interests need to better articulate and agree upon the specific issues at the heart of this discussion in order to seek a fair and workable solution that allows proper development while maintaining the scenic and environmental qualities that make Western North Carolina an unique and beautiful region.

On the surface of this dialogue, the slope percentage allowed on a parcel or lot seems a straightforward way for local governments to control development so that construction occurs in a positive manner.

However, the variety of opinions and perspectives readily illustrate that "steep slope" does not have a commonly accepted definition. Any review of recent ordinances and laws being proposed for Western North Carolina mountain jurisdictions indicates a wide range of standards used as the basis for discussion. Environmental groups tend to consider any grade over 15 percent as steep slope, while builders and developers contend that up to 30-33 percent is acceptable for a standard residential foundation.

Most of the regulations either enacted or under consideration by local governments focus on slopes of 25 percent and higher. The Safe Artificial Slope Construction Act (NC House Bill 1756), currently under consideration, would require a plan prepared by a qualified engineer for any development that occurs on grades greater than 25 percent or in "landslide hazard areas" as mapped by the North Carolina Geological Survey.

Interpreting Slope

Adding to the confusion is the difficulty in interpreting and visualizing these degrees of slope, particularly as they relate to building sites. A 33 percent slope, for example, extended over the 30-foot width of an average home footprint involves a drop of just 10 feet.

From the standpoint of affordable construction, including the costs of site excavation and grading, this would allow for a direct front access to the first floor entry and a walkout basement that maximizes land use and adds value to a home. An easy way to demonstrate this is to place a tape measure on top of a yardstick and extend it out 30 feet to the ground, which illustrates a 3:1 ratio or 33 percent slope. Constructability above this percent is often more difficult, leading to taller foundations and intensive tree clearing.

Land planners, such as civil engineers and landscape architects, can provide proper planning and site evaluation techniques for development, regardless of the parcel size or slope. As part of a preliminary site evaluation, a slope analysis map can be prepared that accurately depicts slopes based on a minimum of five-foot contour intervals.

Using topographic survey information, the grade ranges within the site can be mapped in order to highlight slopes 33 percent and below. This should be verified by the planner through a visit to the property.

Additional data can be provided through a geotechnical report, prepared by a qualified professional, that certifies a site is geologically suitable for its proposed use and provides recommendations for safe, stable grading and development.

An environmental expert may also perform a stream and wetlands survey to make certain such features are properly identified and protected. Based on this information, a land planner can identify "building envelopes" or the pockets of land within the site that are suitable for development and construction purposes. This approach makes certain the structures in the development are positioned in response to the characteristics of the site rather than arbitrarily placed based on a lot size or slope gradient.

This building envelope then dictates the size of the structure that can be built, generally within an area measuring approximately 100 by 100 feet. In practice, the use of a suitable building area, or envelope, is no different than a suburban lot with defined front, side and rear-yard setbacks that dictate where a structure can be built. In the case of a mountain development, the identification of building envelopes within individual parcels can ensure proper density, eliminate slope-related issues, and limit clearing of trees and vegetation.

The identification of building envelopes also maintains natural drainage patterns, protects stream corridors and wetlands, and contributes to preservation of open spaces within a development, further minimizing environmental impact. The utilization of Best Management Practices (BMP) and Low Impact Design (LID) methods can mitigate erosion, sediment and storm water impacts. Preferably, these should be applied to each specific building envelope as well as the overall development, which enhances their effectiveness.

The town of Waynesville adopted this approach recently in its new Hillside Conservation Development design standards and regulations. In its documents, the town noted that the regulations were mandatory "to implement a vision for development within hillside areas, in essence, to blend structures into the surrounding landscape offering an aesthetically pleasing community which places emphasis on enhancement and preservation of the Town of Waynesville's natural beauty and mitigate adverse impacts to the environment."

The town's policy outlines specific requirements for building envelopes and architecture, the latter establishing aesthetic criteria for building style and materials. Structures also are to be positioned within the building envelope "in response to access, slope, unique vegetation, landforms and orientation toward vistas."

Protecting Views

This relationship to vistas points to an issue that has become one of the more critical and contentious components of the current steep slope controversy. Sensitivity to the community viewshed has aroused significant concern and emotional response among citizens who resent the visible intrusion of structures on the higher elevations.

A major cause is clear-cutting, which often is utilized primarily to provide access to an individual view corridor, a highly valued feature of life in the mountains. However, this also exposes the property/structure to others, which can be perceived as detrimental to the overall community viewshed.

One workable answer might be to require selective trimming that can provide the

desired view without unnecessary exposure. This may involve thinning trees to open up views, rather than cutting the trees down. Attention also should be given to preserving the native under-story vegetation that can shield properties from view and reduce opportunities for erosion and run-off. The inclusion of a registered landscape architect and certified arborist into the planning process can help make certain that the correct approaches are used to both allow for generous views while maintaining the overall beauty of the site.

Another solution is increased use and enforcement of design guidelines, such as those established by the town of Waynesville or prepared by private developers, such as Crescent Resources for their Lake James communities, to dictate the range of items that characterize a development or even a single home.

The first requirement of the document should be proper site analysis and identification of suitable building envelopes. The design guidelines, whether prepared by a developer or set by local government, then can make certain that views are protected, structures are suitable in scale and composition to the site, including the height of the overall structure and the height of the foundation.

They also can ensure that damage to the land is minimized even as far as requiring the use of existing logging roads for access (improved to current roadway standards) and/or shared driveways. Design guidelines also can specify acceptable building materials (non-reflective, for example) and even colors, such as natural earth tones to better blend into the surrounding environment.

Setting well-thought out standards for steep slope development is imperative to protect the beauty of the North Carolina mountains while allowing for growth. In many cases, the preservation of views and protection of the natural environment are the greatest concerns.

A common understanding of slope percentages, proper site analysis, and investigation and application of design guidelines are excellent tools that planners, developers and citizens can utilize in order to achieve a mutually acceptable solution.

Editor's note: The Asheville City Council passed a set of mountainside building restrictions on July 10, intended to protect views, prevent landslides and avoid problems with infrastructure. The new ordinance cleared on a 5-2 vote supplements recently-passed building restrictions above 2,220 feet in elevation, the elevation of City Hall. Restrictions would be in effect for sites above 2,350 feet.

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