

## Everson, Rick

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**From:** David Glass <davidg@igesinc.com>  
**Sent:** Friday, December 07, 2012 2:10 PM  
**To:** Everson, Rick; 'Jared Hawes'  
**Cc:** 'Ryan Bradley'  
**Subject:** RE: Powder Mountain Geotech Investigation: cut/fill slopes

**Follow Up Flag:** Follow up  
**Flag Status:** Completed

Rick,

We had a question relating to this several weeks ago – our response is presented below. On hindsight, we probably should have included something like this response in our report. These recommendations are preliminary and are for planning purposes – IGES should review final plans to assess compatibility with these guidelines. If requested, we can put together a more formal document, something like an addendum, to address these specific issues – however, It'd probably be better if we have your first draft plans so our letter could address the specific project plans (and not have to be necessarily general in nature). Feel free to call or email with any questions...

**SUBJECT:** Road cuts – instead of a cut/fill scenario, it is proposed to make all roadways 100% cut, which will eliminate having to place engineered fill and having to deal with cut/fill transition zones, which are prone to differential movement.

**RESPONSE:** IGES has no objection to making all roadways 100% cut, particularly if there are no concerns for balancing cut and fill (Ryan mentioned that soils generated in road cutting could be used to improve areas of proposed ski runs). Care should be taken that cut soils are not wasted in future building areas. They can be used as grading fill, but would need to be moisture conditioned, compacted and tested prior to supporting any structural loads. Please check with us for recommendations if there are specific proposed uses being considered for the cut soils. There may also be concerns with required deeper cuts into the native slope that would necessitate additional grading. To accommodate the increased grade change of a 100% cut roadway, the following preliminary considerations are presented:

- Up-hill cut slopes should be a minimum of 2H:1V. Cut slopes as steep as 1.5H:1V may be allowed; however, the Owner should understand and accept that some surficial raveling and/or rock fall can be expected from these steeper slopes. Some maintenance of 1.5H:1V slopes can be expected over time.
- To preserve the natural aspect of the site, cuts slopes may not be desirable, particularly where a relatively tall cut slope is required to catch natural grade. In these cases, the grade change may be accommodated with a wall or a rockery. Rockeries consist of stacked rocks, typically with a 0.5H:1V batter. Rockeries really act more as 'rip rap' or slope armoring – the use of the term 'rock wall' is something of a misnomer. Ideally, on-site material could be used for the rockeries.
- Where the steepness of the grade change precludes the practical construction of rockeries, a more substantial wall would have to be constructed. For this case, a soil nail wall is usually the most practical solution, IGES can assist in the design, installation and testing of soil nails if desired.

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**From:** Everson, Rick [<mailto:Rick.Everson@nv5.com>]  
**Sent:** Friday, December 07, 2012 1:19 PM  
**To:** David Glass ([davidg@igesinc.com](mailto:davidg@igesinc.com)); Jared Hawes ([jaredh@igesinc.com](mailto:jaredh@igesinc.com))  
**Cc:** Ryan Bradley ([ryan.bradley1313@gmail.com](mailto:ryan.bradley1313@gmail.com))  
**Subject:** Powder Mountain Geotech Investigation: cut/fill slopes

David/Jared-

I have reviewed your report dated 11/9/12 and didn't see recommendations regarding cut and fill daylight slopes. Maybe I missed it? Either way, could we get an opinion on how steep we could generally lay the slope back in both a cut and a fill situation? This makes a large impact on our earthwork numbers.

Your feedback is appreciated,

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