



United States Department of the Interior  
 OFFICE OF SURFACE MINING  
 Reclamation and Enforcement  
 BROOKS TOWERS  
 1020 15TH STREET  
 DENVER, COLORADO 80202

#3

MAR 25 1981

RECEIVED

MAR 27 1981

DIVISION OF  
OIL, GAS & MINING

Mr. Leland C. Spencer  
 Reclamation Engineer  
 Division of Oil, Gas and Mining  
 1588 West North Temple  
 Salt Lake City, Utah 84116

Dear Mr. *Lee* Spencer:

In response to your letter of March 10, 1981, my staff has performed a preliminary review of the slope stability analysis for the Convulsion Canyon Mine access road. We have identified several deficiencies. These deficiencies are of such a nature that the conclusions of the stability analysis cannot be assessed until additional information is received from the applicant.

First, the road fill material has been classified by the engineer as ML/CL which is between inorganic silts and very fine sands and inorganic clays of low to medium plasticity. In order to determine material strength properties, direct shear tests were performed. Direct shear tests are more applicable to cohesionless soils than cohesive soils. When ML/CL materials are tested, triaxial tests are better indicators of strength properties than direct shear. Direct shear tests generally yield higher friction angles than triaxial. The results of the direct shear tests performed by the engineer appear high for material classified as ML/CL. Also, no in-place densities were obtained for the existing road fill nor was a sensitivity analysis run to determine the effect of compaction/placement on stability. This is particularly important since the report states that the fills were placed in an uncontrolled manner. These factors place the input parameters used for the stability analysis in question.

The engineer performed a stability analysis using the Simplified Bishop Method. This slope model in this case assumed a completely drained condition for the road cut. There is little information in the engineer's report to support the fully-drained condition.

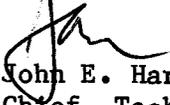
Therefore, it is OSM's recommendation that the applicant submit additional information to support why direct shear tests were used as opposed to triaxial tests. Also, additional testing or a sensitivity analysis should be performed

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to quantify the effects of compaction on fill stability. Information should also be provided supporting the fully drained conditions used in the stability analysis. Until this information can be obtained, it is not possible to determine if the stability analysis performed for the road embankments is representative of the on-site conditions.

If you have any questions concerning this matter, please feel free to contact me or Keith Kirk (303/837-3773) of my staff.

Sincerely,

  
John E. Hardaway  
Chief, Technical Analysis  
and Research Division