

GEOLOGICAL AND STRUCTURAL CHARACTERISTICS IN AND AROUND THE LA MERCED MARBLE LAYERS, CENTRAL CORDILLERA OF THE COLOMBIAN ANDES

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The La Merced Quarries are located in the Central Cordillera of the Colombian Andes. The targets for mining are marble layers interbedded by schistose rocks. The multiple tectonic processes with low-grade metamorphism have resulted in complicated geological structures. Especially remarkable planar structures, some of which were folded, are recognized by discontinuities in both schistose rocks and marble. Typical planar structures and relating discontinuities are NNE-SSW, NNW-SSE and NW-SE trend with steep dip. Both of the units show evidence of multiple stages of metamorphism and deformation. At least two stages of metamorphism (M1-2) and also three stages of deformation (D1, D2 and D3) that generate three schistosity surfaces (S1, S2 and S3) were observed in the field outcrops evidences and thin sections.

M1 has a mineralogical assemblage of quartz+albitic plagioclase+graphite+chlorite+muscovite in the pelitic schists, and chlorite+muscovite+Na-amphibole+diopside+hornblende in the basic schists. The second deformational phase of the first stage of metamorphism has almost the same mineralogical assemblage but in the pelitic schist the presence of andalucite+K-feldspar is reported. This indicates a peak metamorphic condition of about 2.2 Kbar for the pelitic schists. However the coexistence of sodium amphibole, diopside and chlorite suggests a pressure condition of 5 Kbars for the basic schists in the limit between the green and blue schists facies. On the other hand M2 has a mineralogical assemblage of graphite+chlorite in the pelitic schist that indicates lower temperature conditions in comparison with the other tectonometamorphic conditions.