

**Assessment of Construction Material Potential in the Vicinity of  
Nowshera Suburb, Pakistan**

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The construction industry contributes over 10% to the country's GDP, and the assessment of geological materials for their suitability in construction is an emerging discipline within engineering geology. Rocks, regolith, and soil play crucial roles in various construction phases, serving as both dimension stone and processed aggregates. The study area lies within the Peshawar inter-montane basin of the Attock-Cherat Ranges, bounded to the south by the Khyber-Hazara fold and thrust belt and the Main Mantle Thrust fault to the north. The region comprises Precambrian to Quaternary sedimentary and meta-sedimentary rock units, along with fluvial deposits extensively exposed across different locations. The study focused on evaluating the potential of various rock formations as building and construction materials. Specifically, limestone from the Shahkot-Uch Khattak formation, quartzite from Misri Banda, and dolomitized/marmorized limestone from the Nowshera/PirSabak formation near the Nowshera suburb were examined. Petrographically, the mineral composition varied, with calcite constituting less than 90%, quartz less than 92%, and dolomite less than 5%, alongside traces of feldspar, mica, and ore minerals in different rock specimens. Chemically, limestone comprised over 90%  $\text{CaCO}_3$ , while quartzite exhibited a  $\text{SiO}_2$  concentration of 79%. In terms of physical properties, the studied specimens demonstrated extremely strong to very strong unconfined compressive strength, very tough aggregate impact value, sulfate soundness loss of less than 6%, and water absorption below 0.36%. Based on their petrographic, chemical, and physical characteristics, the studied rock units generally conform to relevant international standards for building and construction materials. However, further investigation is required for quartzite to assess its susceptibility to alkali silica reactivity.