

## CLAY MINERALOGICAL STUDIES FOR GREEK BRONZE AGE ROOFING TECHNOLOGY

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The Early Helladic II period (2650-2150 B.C.) of the Greek Bronze Age terminates with the introduction of a monumental architectural phenomenon, termed the “corridor house”. This building structure is verified at Lerna, Akovitika, Kolonna on Aegina, Thebes, and Zygouries. All of these structures exhibit a basic design: rectangular, free-standing, a linear series of rectangular rooms, and corridors on the long sides which also serve as stairwells to a second story. There has been an archaeological emphasis on reconstruction and stylistic development of this building type (e.g. Shaw, 1987). The form is presumed to be part of an indigenous development. However, due to a lack of local raw material references, the construction technology of this architectural form is not well understood. The “House of Tiles” at Lerna is the best preserved corridor house, and the one from which we have obtained the most artifactual evidence (Wiencke, 2000). By employing an approach referred to by us as the *Integrated Petrologic Approach*, the local material references were analytically compared with fired terracotta roof tiles, clay sealings of boxes and baskets, and hearth material from the House of Tiles. It was concluded that these ceramic artifacts could be provenanced to local micaceous sediments, derived from the metamorphosed flysch of the lowest stratigraphic unit in the Lerna area, the Plattenkalk Series (Shriner, 1999). It was further hypothesized that the “schist” slabs used as eaves for the House of Tiles roofing system were derived from this same local stratigraphic package.

Petrographic analysis of twenty stone eaves reveals a fine-grained fabric in line with shale, rather than the expected chloritoid phyllite. In order to further characterize the bulk mineral assemblage, X-ray diffraction analysis was undertaken on the eaves, as well as samples from the local schist, phyllite and flysch deposits. The results indicate that patterns for the majority of eave samples are similar to the mineralogy of shale or siltstones obtained from specific flysch deposits, the Pindos and Tripolitza. The clay mineralogy is chlorite and illite, with accompanying quartz, calcite and muscovite. Bulk geochemical data was retrieved for all eave samples and source materials. Once again, the eaves appear to be quarried from a local geological sedimentary unit, rather than the presumed metamorphic unit. Bulk chemical composition indicates that the eaves analyzed were from one source, based on major oxide and key trace element cross plots. The artifactual data for the House of Tiles samples grouped together in a very homogenous cluster. These results indicate raw material extraction from a specific source location. A local source is suggested on the basis of the previous artifactual provenance evidence. The location of this quarry is predicted to be in the vicinity of the metamorphic window, 15 km northwest of Lerna, or located on the Arcadian border to the west.

Shaw, J. W. 1987. “The Early Helladic II Corridor House: Development and Form,” *American Journal of Archaeology* 91, pp. 59-79.

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Wiencke, M. H. 2000. *Lerna, a Preclassical Site in the Argolid, IV: The Architecture, Stratification and Pottery of Lerna III*, Princeton.