

**(2399) Mapping
and Inspection of
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Utilities**

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**NO-DIG
INVESTIGATION
AROUND
PALAZZO
VECCHIO,
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**NO-DIG INVESTIGATION AROUND PALAZZO VECCHIO,
FLORENCE – ITALY**

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ABSTRACT: Palazzo Vecchio, at Florence (Italy) date back to 1299 when Arnolfo di Cambio built its foundation onto Roman and Medieval ruins. During centuries, the Palace had been enlarged incorporating adjacent buildings until occupying an entire city block; in the meanwhile, the buildings all around had been dismantled for creating the Piazza della Signoria. Recently, in needs for detailed study regarding the subsoil of the area, we opted for the execution of no-dig geophysical investigation suitable for giving information about the presence of ruins and to map shallow bedrock. For this target, we acquired fast and non-invasive geophysical data by mean the capacitive coupled resistivity method, using a multi-receivers array and a 5 m dipolar transmitter (OhmMapper system by Geometrics) along two sides of the Palazzo Vecchio and across Piazza della Signoria. Raw data have been processed to remove outliers, and then analysis modeled to recover the subsurface resistivity pattern up to about 5 m below the street datum, about at the supposed level of the pre-Roman natural ground. The 2-D resistivity sections show the presence of a heterogeneous resistivity distribution highlighted by both horizontal and vertical sharp contrasts with no evidence of a flat and continuous bedrock. These geophysical anomalies can be reasonably attributable to dismantled buildings ruins. Recovered resistivity anomalies have been compared with ancillary information, either geological or archaeological, with the aim to classify and characterize related geological and archaeological features. The adopted geophysical approach rapidly provide us with the very near surface geophysical pictures below and around the Palazzo Vecchio, contributing to enhance the subsoil knowledge of the area with a quick and cheap no-dig investigation methods. This result can guide both addressed archaeological in situ investigation and sub-service excavation works avoiding damaging archaeological features.