



Stability Problems at Ancient Cnidus (Datca, SW Turkey) and Its Relationship with Local Tectonics

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The main scope of this work was investigating the causes of bending and collapsing in the retaining wall of Stoa at ancient Cnidus (SW Turkey) and observing its relationship with local tectonism and seismicity. As a result of data, some solutions in order to prevent for different or more deformations that may occur on the wall in the future is presented. The observed collapse in the wall seems to be engineering problem. To be taken filling material by human factor has brought the instability in the wall. Founding of the ancient Cnidus considered many damaging natural possibilities like earthquake, landslide and rockfall and city structures designed in this way. However, these designs were insufficient to the effects of the earthquakes and active tectonism which shown on the region.

The study area was located at the end of Datca Peninsula (SW Turkey). The ancient city of Cnidus and therefore Datca peninsula and Rhodes are one of the most active district in terms of seismicity in the southern Aegean sea. There are a lot of different sized earthquakes recorded both the historical and instrumental periods affecting the region. Very recently the earthquake storm in the sea maintains a sign of activity of the region. Since the establishment of the ancient Cnidus, medium and large earthquakes occurred in the area and affected by highly and experienced serious destruction. Still traces of these earthquakes can be observed on the surface and structures.

These earthquakes affected structures directly and also could have made changes in ground conditions. As it is already known, because during and immediately after an earthquake, such as landslide, creep, rock fall events can be occur. The ancient Cnidus settled in an area be experienced similar problems. A part of the ancient Cnidus is located on a relatively weakly fitted colluvium material which is a cover unit on whole sloping area. The majority of structures are builded on the debris and filling material especially at low elevations. Due to the morphological structure the city formed by the method of stepped excavation and were high walls and fills built. The interventions to the structures led to stability problems suddenly or in time.

Some active faults bordered the area of the ancient Cnidus, such as Cnidus fault. These normal faults are trending mainly E-W and sloping to the south as 70 degree. All the structures extending in parallel to these faults are affected. The location of Stoa wall is similar. Time-dependent effect of earthquakes took place among the causes of the collapsing in the wall. The ancient Cnidus is located on hanging wall of the faults. If not taking measure, similar problems will continue on the Stoa wall itself, because it is more likely to occur damaged earthquakes in the region.

Key Words: Cnidus, slope, earthquake, seismicity