

Supplementary materials

Table S1. Main petrographic characteristics of all mortar samples. The samples were listed by function and chronology.

Bedding mortars							
Sample	Monument	Chronology	Description	Binder	Aggregate	B/A	Porosity
SA-C1	Sanctuary of Apollo, Building C	Julio-Claudian age	Bedding mortar from the brick vault of the underground chamber	Homogeneous, micritic aspect; few lumps of underburned marble	Mainly composed of silicate metamorphic rocks with meta-sandstones, calc-schists, and quartzite. Minor quantities of travertine, sedimentary limestones, and marble. Rare gneiss and ophiolites. Bimodal grain size distribution. Max grain size 6 mm; min 200 µm. Shape: from sub angular to sub rounded	1/3	scarse
SA-C2	Sanctuary of Apollo, Building C	Julio-Claudian age	Mortar on the extrados of the brick vault of the underground chamber	Non homogeneous, from micritic to microsparitic aspect, partially recrystallized; few lumps of underburned marble	Mainly composed of marble. Minor quantities of sedimentary limestones, schists, and calc-schists. Rare gneiss, quartz, fossiliferous limestones, and ophiolites. Heterogeneous grain size distribution. Max grain size 6.7 mm; min 500 µm. Shape: sub angular.	1/3	medium/high
P1	Ploutonion	Neronian age	Bedding mortar of the brick vault in room Q1 (US 255)	Non homogeneous, from micritic to microsparitic aspect, with partially recrystallized area; lumps of underburned marbles	Mainly composed of quartzite. Minor quantities of travertine, sedimentary limestones, marble. Rare ophiolites, gneiss, fossiliferous limestones, and ceramic fragments. Heterogeneous grain size distribution. Max grain size 1 cm; min 300 µm. Shape: sub angular.	1/3-1/4	medium
P2	Ploutonion	Imperial age	Bedding mortar of the northern pillar of the grotto entrance	Non homogeneous, from micritic to microsparitic aspect, with lumps of underburned travertine	Mainly composed of silicate metamorphic rocks, gneiss, and quartzites. Minor quantities of calc-schists, travertine, marble and meta-sandstones. Rare sedimentary limestones and schists. Heterogeneous grain size distribution. Max grain size 1 cm; min 100 µm. Shape: from angular to sub angular.	1/2	medium
P3	Ploutonion	Imperial age	Bedding mortar of the northern pillar of the grotto entrance	Non homogeneous with lumps of underburned travertine	Mainly composed of silicate metamorphic rocks. Minor quantities travertine, marble. Heterogeneous grain size distribution. Max grain size 2 mm; min 100 µm. Shape: from angular to sub angular	1/2	medium

P4	Ploutonion	Imperial age	Bedding mortar of the eastern wall in room N (US 457)	Homogeneous, micritic aspect	Mainly composed of travertine, marble, quartzites, schists. Minor quantities of calc-schists, and sedimentary limestones. Rare gneiss, meta-sandstones and ophiolites. Bimodal grain size distribution. Max grain size 6 mm; min 200 µm. Shape: sub angular.	1/2-1/3	scarse
P5	Ploutonion	Imperial age	Bedding mortar of the northern temenos wall, room O (US 323)	Non homogeneous from micritic to microsparitic	Mainly composed of fossiliferous limestones, and breccias. Minor quantities of quartzite, marble, sedimentary limestones, schists, gneiss. Rare travertine, calc-schists, ceramic fragments, ophiolites. Bimodal grain size distribution. Max grain size 7 mm; min 200 µm. Shape: sub angular.	1/3-1/4	medium
SS1	Stoa of the Springs	Flavian age	Central hall, bedding mortar of the northern wall (inner facing)	Non homogeneous with earth residues, from micritic to microsparitic aspect.	Mainly composed of calc-schists, sedimentary limestones, marble and quartzites. Minor quantities fossiliferous limestones, gneiss and travertine. Rare breccias, ceramic fragments, schists. Heterogeneous grain size distribution. Max grain size 2 mm; min 300 µm. Shape: sub rounded/sub angular.	1/2-1/1	high
SS2	Stoa of the Springs	Flavian age	Central hall, bedding mortar of the northern wall (concrete fill)	Non homogeneous, micritic aspect.	Mainly composed of calc-schists, quartzites, and travertine. Minor quantities of schists, marble, sedimentary limestone. Rare breccias, meta-sandstones and ophiolites. Heterogeneous grain size distribution: numerous fragments of quartz in small size and carbonate rocks with major grain size. Max grain size 5 mm; min 50 µm. Shape: sub angular.	1/3	medium
SS3	Stoa of the Springs	Flavian age	Central hall, bedding mortar of the northern wall (external facing)	Non homogeneous, micritic aspect.	Mainly composed of marble and schists. Minor quantities of calc-schists, quartz, sedimentary limestones, and ceramic fragments. Rare meta-sandstones, gneiss, ophiolites, and breccias. Heterogeneous grain size distribution. Max grain size 7 mm; min 250 µm. Shape: sub rounded.	1/3	medium
GB1	Great Building - Roman Baths	Flavian age	Eastern wall, bedding mortar from the arch above the entrance	Heterogeneous, micritic aspect, with lumps due to underburned marble fragments	Mainly composed of calc-schists. Minor quantities of marble, quartzite, meta-sandstones, and schists. Rare gneiss, sedimentary limestones, ophiolites. Heterogeneous grain size distribution. Max grain size 9 mm; min 100 µm. Shape: sub angular	1/4	low

GB2	Great Building - Roman Baths	Flavian age	Bedding mortar of the marble slabs in the northern room (western wall)	Heterogeneous, micritic aspect; few lumps of underburned travertine	Mainly composed of marble, and crushed ceramic fragments. Rare sedimentary limestones, ophiolites, quartz, schists, and gneiss. Heterogeneous grain size distribution. Max grain size 7 mm; min 250 µm. Shape: sub angular	1/2-1/3	medium
TH1	Theatre	Severan age	Logeion, aedicula south of the main entrance, bedding mortar of the pavonazzetto slabs	Heterogenous, from micritic to microsparitic aspect, with recrystallized areas and lumps of underburned travertine	Mainly composed of crushed ceramic fragments. Rare marbles and quartz. The carbonate rock fragments have a unimodal grain size distribution, the crushed ceramics have a bimodal grain size distribution. Max grain size 8 mm; min 300 µm. Shape: sub angular/sub rounded.	1/1-2/1	low
TH2	Theatre	Severan age	Stage building, room south of the scaena, bedding mortar from the wall east of the door	Homogeneous, micritic aspect.	Mainly composed of sedimentary limestones. Minor quantities of travertine, marble, quartz, gneiss, and breccias. Rare calc-schists, ophioltes, fossiliferous limestones, schists, ceramic fragments, and meta-sandstones. Heterogeneous grain size distribution. Max grain size 4 mm; min 300 µm. Shape: angular.	1/1-1/2	medium
NT1	Nymphaeum of the Tritons	Severan age	Northern forepart, southern wall, bedding mortar of the marble revetment	Non homogeneous, micritic aspect.	Mainly composed of crushed ceramic fragments. Rare marble, schists, sedimentary limestones, and quartz. Max grain size 3 mm; min 200 µm. Shape: rounded for the carbonate components, angular for the silicate	1/3	low
NT2	Nymphaeum of the Tritons	Severan age	Southern forepart, northern wall, bedding mortar of the marble revetment	Non homogeneous, from micritic to microsparitic aspect, with recrystallized areas.	Mainly composed of crushed ceramic fragments. Minor quantities of travertine. Rare sedimentary limestones, quartz, schists, marble, meta- sandstones, and gneiss. Bimodal grain size distribution. Max grain size 4 mm; min 200 µm Shape: sub angular.	1/1-1/2	medium
NT3	Nymphaeum of the Tritons	Severan age	Southern forepart, northern wall, bedding mortar of the marble revetment	Non homogeneous, from micritic to microsparitic aspect.	Mainly composed of crushed ceramic fragments. Minor quantities of quartz. Rare sedimentary limestones, meta-sandstones, gneiss, marble, and schists. Bimodal grain size distribution. Crushed ceramics. Max grain size 1.6 mm; min 200 µm Shape: sub angular.	1/2	medium
SA-A1	Sanctuary of Apollo, Building A	Severan age	Mortar between the blocks of the cella socle	Homogeneous, micritic aspect.	Mainly composed of travertine, schists, and ophiolites. Minor quantities of calc-schists, marble, and quartzites. Rare sedimentary limestones, gneiss, breccias, meta-sandstones and	1/3-1/4	medium

					amphibolites. Bimodal grain size distribution. Max grain size 4 mm; min 300 µm. Shape: sub rounded.		
SA-A2	Sanctuary of Apollo, Building A	Severan age	Mortar between the orthostates of the cella	Non homogeneous, micritic aspect.	Mainly composed of marble, travertine, and sedimentary limestones. Minor quantities of ophiolites, calc-schists, and meta-sandstones. Rare quartz, gneiss, schists. Heterogeneous grain size distribution. Max grain size 5 mm; min 100 µm. Shape: sub angular/sub rounded.	1/3-1/4	medium
SA-A3	Sanctuary of Apollo, Building A	Severan age	Bedding mortar of the marble slabs of the podium	Non homogeneous, from micritic to microsparitic aspect, with lumps of underburned marble fragments	Mainly composed of marble and quartzite. Minor quantities of sedimentary limestones, ophiolites, quartz and schist. Heterogeneous grain size distribution. Max grain size 3 mm; min 300 µm. Shape: sub angular.	1/3	medium
SA-A4	Sanctuary of Apollo, Building A	Severan age	Bedding mortar of the podium blocks	Non homogeneous from micritic to microsparitic with partially recrystallized area	Mainly composed of marble. Minor quantities of travertine, and breccias. Rare sedimentary limestones, gneiss, quartz, ophiolites, fossiliferous limestones, schists, ceramic fragments, and calc-schists. Heterogeneous grain size distribution. Max grain size 9 mm; min 300 µm. Shape: sub angular.	1/3-1/4	medium
P6	Ploutonion	Early-byzantine	Bedding mortar from the facing of the back wall of the nymphaeum	Homogeneous, micritic aspect.	Mainly composed of quartz, and marble. Minor quantities of sedimentary limestones, schists, calc-schists, travertine, and fossiliferous limestones. Rare phyllite, ophiolites, and gneiss. Heterogeneous grain size distribution. Max grain size 7 mm; min 300 µm. Shape: sub angular.	1/3 - 1/4	medium
SA-A5	Sanctuary of Apollo, Building A	Early-byzantine	Bedding mortar of the wall set against the cella	Non homogeneous, from micritic to microsparitic aspect, with recrystallized areas.	Mainly composed of crushed ceramic fragments. Rare quartz, sedimentary limestones and ophiolites. Bimodal grain size distribution. Max grain size 9 mm; min 500 µm. Shape: sub angular.	1/2	medium
SP1	St. Philip Church	Early byzantine	Bedding mortar from wall US 66	Homogeneous, micritic aspect with few lumps of underburned marbles	Mainly composed of quartzite, calc-schist, schist. Minor quantities marble, travertine. Rare phyllites. Heterogeneous grain size distribution. Maximum grain size >2 mm; min 300 µm . Shape: sub rounded	1/4	medium
SP2	St. Philip Church	Early byzantine	Bedding mortar from wall US 65	Non homogeneous, micritic aspect, with lumps of	Mainly composed of schist, quartzite, travertine, ophiolites and rare fossiliferous limestones. Heterogeneous grain size distribution. Maximum	1/3-1/4	medium

				underburned marbles and partially recrystallized area	grain size Max 3 mm; min 300 µm . Shape: sub rounded		
SP3	St. Philip Church	Early byzantine	Bedding mortar from northern apse (US 211)	Non homogeneous, from micritic to microsparitic aspect	Mainly composed of crushed ceramic fragments, rare silicate and carbonate rock fragments. Heterogeneous grain size distribution. Maximum grain size Max 4 mm; min 200 µm. Shape: sub angular	1/3	medium
SP4	St. Philip Church	Early byzantine	Bedding mortar from Synthronon	Homogeneous, micritic aspect with rare lumps of underburned marble	Mainly composed of gneiss , and calc-schists. Minor quantities of quartz, marble, travertine, and sedimentary limestones. Rare schists, meta-sandstones, and ophiolites. Heterogeneous grain size distribution. Maximum grain size Max grain size 5 mm;min 200 µm. Shape: sub angular	1/3-1/4	low
SP5	St. Philip Church	Early byzantine	Bedding mortar from central apse (US 210)	Homogeneous, micritic aspect.	Mainly composed of crushed ceramic fragments, rare silicate and carbonate rock fragments. Heterogeneous grain size distribution. Maximum grain size Max 4 mm; min 200 µm . Shape: sub angular	1/3-1/4	Low
SP6	St. Philip Church	Early byzantine	Bedding mortar from southern nave (US389)	Homogeneous, micritic aspect with few lumps of underburned marbles	Mainly composed of calc-schist. Minor quantities of quartzite, travertine, marble. Heterogeneous grain size distribution. Maximum grain size Max> 2 mm. Shape: sub angular	1/3-1/4	Low
SP7	St. Philip Church	Middle byzantine	Bedding mortar from northern side of a middle Byzantine wall, west of pillars US 372	Homogeneous, micritic aspect, with lumps of underburned marbles and recrystallization	Mainly composed of crushed ceramic fragments. Rare quartz, travertine, meta-sandstone, sedimentary limestones, marble, and gneiss. Heterogeneous grain size distribution. Maximum grain size 1 cm; min 300 µm. Shape: sub angular.	1/3-1/4	Medium
SP8	St. Philip Church	Middle byzantine	Bedding mortar from southern side of a middle Byzantine wall, west of pillars US 372	Non homogeneous, micritic aspect, with lumps with few lumps of underburned marbles	Mainly composed of schist, minor quantities of ophiolites (magmatic rocks?) and quartzite. Heterogeneous grain size distribution. Maximum grain size >2 mm. Shape: subangular.	1/2	Medium
SS4	Stoa of the Springs	Uncertain	Back wall between the two halls	Non homogeneous with earth residues, from micritic to microsparitic aspect.	Mainly composed of marble, calc-schists, and travertine. Rare sedimentary limestones, quartz and ceramic fragments. Heterogeneous grain size distribution: quartz in small size (Max 400 µm), and carbonate rocks with major grain size Max grain size 4 mm; min 50 µm. Shape: sub angular.	1/2-1/1	High
Renders							
Sample	Monument	Chronology	Description	Binder	Aggregate	B/A	Porosity

SS5	Stoa of the Springs	Flavian age	Central hall, coating mortar of the south-east corner	Non homogeneous, from micritic to microsparitic aspect.	Mainly composed of crushed ceramic fragments. Rare calc-schists, gneiss, quartz. Bimodal grain size distribution. Max grain size 1.3 cm; min 500 µm. Shape: angular.	1/3	Medium
NA1	Nymphaeum of the Apollo Sanctuary	Late Antonine age	Inner coating of the basin, eastern wall	Heterogeneous, from micritic to microsparitic aspect.	Mainly composed of crushed ceramic fragments. Rare marble, schists, meta-sandstones, and quartz. Max grain size 3 mm; min 200 µm. Shape: angular.	1/1 – 2/1	Medium
SP9	Roman tomb in St. Philip Church	undated, Imperial (?)	internal coating plaster from a roman tomb inside room B	Homogeneous micritic aspect.	Mainly composed of sedimentary limestones. Minor quantities of quartzite. Rare schist and breccias. Heterogeneous grain size distribution. Max 1.5 mm; min 200 µm. Shape: from sub angular to sub rounded.	1/1-2/1	Medium
SP10	St. Philip Church	Early byzantine	Inner plaster from pillar US 372 in the northern nave	Non homogeneous, micritic aspect, with lumps of underburned marbles.	Mainly composed of travertine. Minor quantities of ophiolites, marble, schist, quartz. Heterogeneous grain size distribution. Maximum grain size >1 mm; min 200 µm. Shape: sub angular.	1/3	Medium
SP11	St. Philip Church	Early byzantine	Inner plaster from pillar southern side of pillar US 372 in the northern nave	Non homogeneous, micritic aspect, with lumps of underburned marbles.	Mainly composed of marble and schists. Minor quantities of sedimentary limestones, and quartz. Heterogeneous grain size distribution. Maximum grain size 2 mm; min 150 µm. Shape: sub rounded.	1/1	High
SP12	St. Philip Church	Early byzantine	Inner plaster from pillar southern wall of the southern nave (US 387)	Non homogeneous, micritic aspect, with lumps of underburned marbles.	Mainly composed of quartzite, schist, travertine and marble. Heterogeneous grain size distribution. Maximum grain size > 1 mm. Shape: sub angular	1/3-1/4	Medium
SP13	St. Philip Church	Early byzantine	Inner plaster from pillar southern wall of the southern nave (US 387)	Non homogeneous, micritic aspect, with lumps of underburned marbles.	Mainly composed of quartzite, schist, travertine and marble. Heterogeneous grain size distribution. Maximum grain size > 1 mm. Shape: sub angular	1/3-1/4	Medium
SP14	St. Philip Church	Early byzantine	Inner plaster from pillar southern wall of the southern nave (US 387)	Homogeneous, micritic aspect, with lumps of underburned marbles.	Mainly composed of calc-schist, meta-sandstone, marble and quartzite. Heterogeneous grain size distribution. Maximum grain size > 2 mm. Shape: sub angular	1/2	Medium
SP15	St. Philip Church	Early byzantine	Inner plaster from pillar southern wall of the southern nave (US 387)	Non homogeneous, micritic aspect.	Mainly composed of travertine and marble. Minor quantities of quartzite and schist. Heterogeneous grain size distribution. Max 500 µm. Shape: sub angular	1/2	Medium

SS6	Stoa of the Springs	Uncertain	Central hall, coating mortar/plaster from the collapsed materials	Homogeneous, micritic aspect.	Mainly composed of calc-schists and gneiss. Minor quantities of travertine, ophiolites, marble, quartzite, schists. Rare sedimentary limestones, phyllite, and breccias. Heterogeneous grain size distribution Max grain size 5.5 mm; min 200 µm. Shape: sub angular.	1/3-1/4	Medium
SS7	Stoa of the Springs	Uncertain	Southern hall, coating mortar	First layer: non homogeneous, from micritic to microsparitic aspect. Second layer: homogeneous, micritic aspect.	The sample is characterised by the presence of two levels of mortar: the first one similar to SS4. Mainly composed of quartz and carbonate rock fragments, travertines, sedimentary limestones, marble. Minor quantities schist, calc- schist. Rare breccias, and gneiss. Heterogeneous grain size distribution: quartz in small size and carbonate rocks with major grain size. The second one is a mortar made with homogenous lime binder and a small amount of aggregate well sorted. Mainly composed of meta-sandstone (max 2.6 mm), marble (max 800 µm). Minor quantities of travertine, ophiolites, quartzite, and schist. Rare gneiss. On the top of this mortar a continuous red pigmented layer was observed.	1/1	first level high, second level low
SP16	St. Philip Church	Early byzantine	External plaster from pillar US 372 in northern nave	Non homogeneous, micritic aspect, with lumps of underburned marbles	Mainly composed of marble, quartzite. Rare breccias. Use of straw as an additive. Heterogeneous grain size distribution. Maximum grain size >1 mm; min 200 µm . Shape: sub angular	3/1	High
SP17	St. Philip Church	Early byzantine	External plaster from pillar US 372 in the northern nave	Non homogeneous, micritic aspect, with lumps of underburned marble and partially recrystallized area	Addition of straw	only binder	high
SP18	St. Philip Church	Early byzantine	External plaster from wall US 66	Non homogeneous, micritic aspect, with lumps of underburned marble and partially recrystallized area	Addition of straw	3/1 - 4/1	high
SP19	St. Philip Church	Early byzantine	External plaster from wall US 65	Non homogeneous, micritic aspect, with lumps underburned marble and partially recrystallized area	Addition of straw	only binder	very high

SP20	St. Philip Church	Early byzantine	External plaster from southern side of a middle Byzantine wall, west of pillars US 372	Non homogeneous, micritic aspect, with many lumps of underburned marble	Addition of straw	only binder	very high
SP21	St. Philip Church	Early byzantine	External plaster from second pillar in the northern nave	Non homogeneous, micritic aspect, poorly mixed, with many lumps of underburned marble	Addition of straw	only binder	very high with secondary calcite.
SP22	St. Philip Church	Early byzantine	External plaster from third pillar in the northern nave	Homogeneous, micritic aspect, with lumps of underburned marble	Addition of straw	only binder	very high
SP23	St. Philip Church	Early byzantine	External plaster from northern apse (US 211)	Homogeneous, micritic aspect, with lumps	Addition of straw	only binder	very high
SP24	St. Philip Church	Early byzantine	External plaster from pillar US 364	Non homogeneous, micritic aspect, with lumps of underburned marble	Addition of straw	only binder	very high
SP25	St. Philip Church	Early byzantine	External plaster from southern wall of southern nave (US 387)	Homogeneous, micritic aspect, with lumps	Addition of straw	only binder	very high
SP26	St. Philip Church	Early byzantine	External plaster from southern wall of southern nave (US 387)	Non homogeneous, micritic aspect, with lumps of underburned marble	Addition of straw	only binder	very high
SP27	St. Philip Church	Early byzantine	External plaster from southern side of pillar US 360	Non homogeneous, micritic aspect, with lumps of underburned marble	Addition of straw	only binder	very high
SP28	St. Philip Church	Early byzantine	External plaster from Synthronon: central niche of the rear wall	Non homogeneous, from micritic to microsparitic aspect, with lumps	Addition of straw	only binder	very high
SP29	St. Philip Church	Early byzantine	External plaster from southern nave (US 389)	Non homogeneous, micritic aspect, with lumps of underburned marble fragments	Mainly composed of straw. Rare lithic parts composed of overburned marble, marble, and sedimentary limestones.	only binder	very high
SP30	St. Philip Church	Middle byzantine	External plaster from coating of basin US 467	Non homogeneous, from micritic to microsparitic aspect.	Mainly composed of crushed ceramic fragments. Rare quartz and ophiolites. Bimodal grain size distribution. Max 2 mm; min 100 µm. Shape: sub rounded.	1/3	Low

SP31	St. Philip Church	Middle byzantine	External plaster from coating of basin US 467	Non homogeneous, from micritic to microsparitic aspect.	Mainly composed of ceramic fragments. Minor quantities of sedimentary limestones and travertine. Rare gneiss, quartz, meta-sandstones, fossiliferous limestones, and marble. Bimodal grain size distribution. Max 4 mm; min 100 µm. Shape: from angular to sub angular.	1/3	Medium
Grouting mortars							
Sample	Monument	Chronology	Description	Binder	Aggregate	B/A	Porosity
NA2	Nymphaeum of the Apollo Sanctuary	Late Antonine age © Early byzantine	Grouting between the blocks of the eastern wall	Homogeneous, micritic aspect	Mainly composed of travertine, sedimentary limestones, and marbles. Minor quantities of quartzite, phyllites. Rare calc-schists, schists meta-sandstones, breccias, ophiolites and gneiss. Heterogeneous grain size distribution. Max grain size 5 mm; min 200 µm. Shape: sub rounded.	1/2 – 1/3	Low
NT4	Nymphaeum of the Tritons	Severan age	Northern forepart, southern wall, grouting mortar	Homogeneous (micritic aspect)	Mainly composed of travertine, sedimentary limestones, marble. Minor quantities of breccias. Rare quartz, ceramic fragments, schists, gneiss, calc-schists, and ophiolites. Heterogeneous grain size distribution. Max grain size 2 mm; min 200 µm. Shape: sub angular.	2/1-3/1	Medium
SP32	St. Philip Church	Early byzantine	Grouting mortar from western side of wall US 375	Non homogeneous, from micritic to microsparitic aspect, with lumps of underburned marble.	Mainly composed of of crushed ceramic fragments. Minor quantities of quartzite and marble. Rare ophiolites(?). Bimodal grain size distribution. Max 2 mm; min 200 µm. Shape: sub angular.	1/3	Medium
SP33	St. Philip Church	Early byzantine	Grouting mortar from northern side of wall US375	Non homogeneous , from micritic to microsparitic aspect.	Mainly composed of ceramic fragments. Minor quantities of marble. Rare sedimentary limestones, quartz, gneiss, and breccias. Bimodal grain size distribution. Max 3 mm; min 200 µm. Shape: sub angular.	1/3	Medium
In-fill mortars							
Sample	Monument	Chronology	Description	Binder	Aggregate	B/A	Porosity
NA3	Nymphaeum of the Apollo Sanctuary	Early-Byzantine age	Mortar from the concrete fill of the southern forepart	Non homogeneous, from micritic to microsparitic aspect.	Mainly composed of calc-schists. Minor quantities of schists, and marble. Rare meta-sandstones, phyllites, sedimentary limestones, gneiss, and ophiolites. Heterogeneous grain size distribution. Max grain size 1 cm; min 200 µm Shape: sub angular.	1/2	Medium

P7	Ploutonion	Early-Byzantine age	Mortar from the concrete fill of the back wall of the nymphaeum	Homogeneous, micritic aspect.	Mainly composed of calc-schists. Minor quantities of phyllite, quartzite, meta-sandstones, travertines, sedimentary limestones, and fossiliferous limestones. Rare gneiss, schists, breccias, and ophiolites. Heterogeneous grain size distribution. Max grain size 7 mm; min 300 µm. Shape: sub rounded/sub angular.	1/3 - 1/4	Medium
Opus sectile bedding mortars							
Sample	Monument	Chronology	Description	Binder	Aggregate	B/A	Porosity
SP34	St. Philip Church	Early byzantine	Opus sectile bedding mortar. Bema, pavement of early Byzantine phase	Heterogeneous, , from micritic to microsparitic aspect with lumps of underburned marble	Mainly composed of marble, meta-sandstone and quartzite. Minor quantities travertine, sedimentary limestones, ophiolites. Rare breccias, fossiliferous limestones. Heterogeneous grain size distribution. Max 5.5 mm; min 200 µm. Shape: sub angular.	1/3-1/4	Medium
SP35	St. Philip Church	undated, post Early byzantine	Opus sectile bedding mortar. Bema, pavement of middle Byzantine phase	Heterogeneous	Mainly composed of crushed ceramic fragments. Minor quantities of silicate rock fragments. Max 2 mm; min 300 µm. Shape: sub angular/sub rounded.	½	Low
SP36	St. Philip Church	undated	Opus sectile bedding mortar from room C	Heterogeneous, micritic/microsparitic	Mainly composed of schist, quartzite and quartz. Minor quantities of marble sedimentary limestones, crushed ceramic fragments. Rare ophiolites and gneiss. Heterogeneous grain size distribution. Max 8 mm, min 300 µm. Shape: sub angular/sub rounded.	1/3-1/4	Medium
SP37	St. Philip Church	Middle byzantine	Opus sectile bedding mortar from central nave (to the north of solea)	Homogeneous, from micritic to microsparitic aspect.	Mainly composed of schist, calc-schist, marble. Minor quantities of quartzite, crushed ceramic fragments and sedimentary limestone. Rare gneiss and ophiolites. Heterogeneous grain size distribution. Max 2 mm, min 200 µm. Shape: sub angular/sub rounded.	½	Medium
SP38	St. Philip Church	undated	Opus sectile bedding mortar from room B	Heterogeneous	Mainly composed of crushed ceramic fragments. Minor quantities of carbonate rock fragments. Bimodal grain size distribution. Max 1,5 mm; min 200 µm. Shape: sub angular/sub rounded.	1/3-1/4	Low
Marmorino cladding							

P8	Ploutonion	Before 60 AD	Doric frieze reemployed, with cladding, in the wall of the northern entrance to the area in front of the grotto (US 238)	Homogeneous	Mainly composed of calcite fragments obtained from crushing marbles Few fragments coarse grained, prevailing size 200-300 µm.	1/1	Low
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Table S2. Modal analysis of aggregates of mortar-based materials.

	Gneiss	Calc-schist	Micritic limestone	Marble	Serpentine	Gabbro-like	Meta-sandstone	Breccias	Qz-quartzite	Schist	Ceramics	Amphibolite	Fossiliferous limestone	Overburnt fragments	Travertine	Phyllite
SA-C1	3.46	22.48	9.96	5.73	0.31	0.00	33.67	0.00	7.26	5.49	0.00	0.20	0.00	0.00	11.44	0.00
SA-C2	1.85	15.78	25.86	29.91	0.52	0.00	0.02	0.00	2.60	18.07	0.00	0.73	3.84	0.00	0.83	0.00
P2	31.02	9.55	2.58	6.12	2.32	0.00	4.86	0.00	21.09	1.03	0.00	0.08	0.31	11.27	9.76	0.00
P4	4.63	9.61	7.79	20.63	0.11	0.00	1.05	0.00	14.10	10.94	0.00	0.00	0.00	0.00	31.15	0.00
SS1	6.31	17.82	17.27	17.05	0.00	0.00	0.97	2.49	15.83	2.35	2.77	0.00	11.62	0.00	5.51	0.00
SS2	0.53	21.16	6.77	11.85	2.75	1.80	2.65	4.44	20.42	11.75	0.00	0.00	0.00	0.00	15.87	0.00
SS3	4.32	11.06	8.04	29.64	3.73	0.68	4.11	1.22	11.35	17.81	8.04	0.00	0.00	0.00	0.00	0.00
SS4	0.00	17.98	3.62	53.25	0.00	0.65	1.00	1.00	2.64	0.55	2.41	0.00	0.00	0.00	16.88	0.00
SS5	0.31	0.52	0.10	0.03	0.00	0.00	0.10	0.00	0.21	0.10	98.62	0.00	0.00	0.00	0.00	0.00
GB2	0.30	0.00	1.70	51.34	0.20	0.80	0.60	0.00	2.21	0.30	42.12	0.02	0.00	0.00	0.40	0.00
NT1	0.00	0.00	3.14	3.51	0.00	0.00	0.00	0.00	2.55	3.30	87.51	0.00	0.00	0.00	0.00	0.00
NT2	0.50	0.00	3.12	1.31	0.00	0.00	1.11	0.00	1.81	1.21	85.01	0.00	0.00	0.00	5.94	0.00
NT3	1.20	0.00	3.90	0.88	0.00	0.00	1.52	0.00	8.46	0.71	83.32	0.00	0.00	0.00	0.00	0.00
TH1	0.30	0.00	0.30	1.50	0.00	0.00	0.00	0.00	0.50	0.20	97.14	0.00	0.00	0.00	0.06	0.00
TH2	9.11	4.25	33.00	11.74	2.53	0.91	1.01	6.48	10.43	1.52	2.53	0.00	2.63	0.00	13.87	0.00
SA-A4	3.80	0.40	4.50	67.17	0.40	2.70	0.00	5.31	3.00	2.40	0.60	0.20	2.40	0.00	7.11	0.00
SA-A1	5.72	9.38	5.65	10.12	5.69	11.38	2.52	3.04	11.45	17.01	0.00	1.04	0.00	0.00	16.95	0.00
SA-A2	3.12	9.14	14.75	28.04	0.42	10.59	8.93	0.00	3.63	2.39	0.00	0.31	0.62	0.00	18.07	0.00
NT4	2.10	2.10	17.46	17.35	1.44	0.44	0.00	6.52	4.09	2.32	3.20	0.55	0.00	0.00	42.43	0.00
NA3	1.91	67.48	3.91	7.12	0.26	0.00	4.81	1.20	0.00	7.42	0.00	0.17	0.00	0.00	1.50	4.21
SA-A5	0.00	0.00	0.40	0.00	0.00	0.10	0.00	0.00	0.70	0.10	98.60	0.00	0.00	0.00	0.10	0.00
P6	1.51	8.64	12.86	14.27	1.31	1.05	1.71	0.07	33.96	9.20	0.00	0.04	5.04	0.00	5.63	4.72
SP4	32.46	30.75	5.73	7.74	0.90	0.00	2.61	0.00	9.55	3.82	0.10	0.20	0.00	0.00	6.13	0.00
SP31	2.41	0.00	7.34	0.90	0.00	0.00	1.41	0.00	2.01	0.20	84.12	0.30	1.31	0.00	0.00	0.00
SP33	1.80	0.00	3.11	9.12	0.00	0.00	0.00	1.80	1.90	0.70	81.56	0.00	0.00	0.00	0.00	0.00
SP11	0.00	0.00	18.62	34.23	0.00	0.00	0.00	0.00	16.12	31.03	0.00	0.00	0.00	0.00	0.00	0.00
SP29	0.00	0.00	10.03	17.85	0.00	0.00	0.00	0.00	4.21	2.41	2.51	0.00	0.00	61.58	1.40	0.00

SP7	1.01	0.20	1.72	1.12	0.00	0.00	2.03	0.00	3.14	0.00	88.03	0.10	0.00	0.00	2.64	0.00
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	Metamorphic	Sedimentary	Ophiolites	Cocciopesto		Silicate	Carbonate	Ceramics		dating	Function	Building
SA-C1	78.29	21.40	0.31	0.00		72.86	27.14	0.00		Julio-Claudian	Bedding mortar	Temple of Apollo Building C
SA-C2	68.95	30.53	0.52	0.00		39.56	60.44	0.00		Julio-Claudian	Bedding mortar	Temple of Apollo Building C
P2	73.76	23.92	2.32	0.00		69.95	30.05	0.00		Imperial	Bedding mortar	Ploutonion
P4	60.96	38.94	0.11	0.00		40.44	59.56	0.00		Imperial	Bedding mortar	Ploutonion
SS1	60.33	36.90	0.00	2.77		43.29	53.95	2.77		Flavian	Bedding mortar	Stoa of the springs
SS2	68.36	27.09	4.55	0.00		61.06	38.94	0.00		Flavian	Bedding mortar	Stoa of the springs
SS3	78.29	9.27	4.40	8.04		53.05	38.91	8.04		Flavian	Bedding mortar	Stoa of the springs
SS4	75.43	21.50	0.65	2.41		22.84	74.75	2.41		Flavian	Bedding mortar	Stoa of the springs
SS5	1.27	0.10	0.00	98.62		1.24	0.13	98.62		Flavian	Coating	Stoa of the springs
GB2	54.77	2.11	1.00	42.12		4.43	53.45	42.12		Flavian	Bedding mortar	Great building
NT1	9.36	3.14	0.00	87.51		5.85	6.65	87.51		Severan	Bedding mortar	Nymphaeum of the tritons
NT2	5.94	9.05	0.00	85.01		4.63	10.36	85.01		Severan	Bedding mortar	Nymphaeum of the tritons
NT3	12.77	3.90	0.00	83.32		11.89	4.78	83.32		Severan	Bedding mortar	Nymphaeum of the tritons
TH1	2.50	0.36	0.00	97.14		1.00	1.86	97.14		Severan	Bedding mortar	Theatre
TH2	38.06	55.97	3.44	2.53		29.76	67.71	2.53		Severan	Bedding mortar	Theatre
SA-A4	76.98	19.32	3.10	0.60		12.91	86.49	0.60		Severan	Bedding mortar	Temple of Apollo
SA-A1	57.24	25.64	17.06	0.00		64.18	35.76	0.00		Severan	Bedding mortar	Temple of Apollo Building A
SA-A2	55.56	33.44	11.01	0.00		38.53	61.47	0.00		Severan	Bedding mortar	Temple of Apollo, Building A
NT4	28.51	66.41	1.88	3.20		13.04	83.76	3.20		Severan	Grouting	Nymphaeum of the tritons
NA3	93.12	6.62	0.26	0.00		82.05	13.74	0.00		Early byzantine	Concrete Fill	Nymphaeum of temple Apollo
SA-A5	0.80	0.50	0.10	98.60		0.90	0.50	98.60		Early byzantine	Bedding mortar	Temple of Apollo, Building A
P6	74.04	23.60	2.36	0.00		57.41	37.86	0.00		Early byzantine	Bedding mortar	Ploutonion
SP4	87.14	11.86	0.90	0.10		80.30	19.60	0.10		Early byzantine	Bedding mortar	Saint Philip Chure
SP31	7.24	10.45	0.00	84.12		6.33	11.35	84.12		Early byzantine	Hydraulic coating	Saint Philip Chure
SP33	13.53	3.11	0.00	81.56		4.41	12.22	81.56		Early byzantine	Grounting	Saint Philip Chure
SP11	81.38	18.62	0.00	0.00		47.15	52.85	0.00		Early byzantine	Inner plaster	Saint Philip Chure
SP29	24.47	73.02	0.00	2.51		6.62	90.87	2.51		Early byzantine	External plaster	Saint Philip Chure
SP7	7.61	4.36	0.00	88.03		6.49	5.48	88.03		Middle byzantine	Bedding mortar	Saint Philip Chure

Table S3. Morphometric and morphological studies of aggregates, subdivided by species, in mortar materials analysed with Digital Image Analysis.

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sample	gneis s	amphibolit e	schist	micrite limeston e	breccias	meta- sandston e	trav ertine	calc- schis t	marble	serpentine	Gabbr o-like	fossiliferou s limestone	ceramic fragment s	qz- quartzite	phyllit e	dating	function	building	cocciopesto
SA-C1	0.22	0.19	0.02	0.2		0.5	0.1	0.2	0.1	0.16				0.04		Julio- Claudian	Bedding mortar	Temple of Apollo Building C	
SA-C2	0.3	0.9	0.7	0.02		0.61	0.3	0.4	0.02	0.27		1.4		0.2		Julio- Claudian	Bedding mortar	Temple of Apollo Building C	
P2	0.14	0.33	0.12	0.2		0.2	0.24	0.36	0.21	0.18		0.67		0.21		Imperial	Bedding mortar	Ploutonio n	
P4	0.22		0.13	0.17		0.17	0.3	0.24	0.12	0.38				0.14		Imperial	Bedding mortar	Ploutonio n	
SS1	0.08		0.13	0.11	0.39	0.13	0.12	0.16	0.12			1.74	0.4	0.07		Flavian	Bedding mortar	Stoa of the springs	cocciopesto
SS2	0.2		0.1	0.2	0.25	0.25	0.02	0.2	0.13	0.15	0.27			0.04		Flavian	Bedding mortar	Stoa of the springs	
SS3	0.11		0.11	0.1	0.27	0.2	0.1	0.2	0.08	0.3	0.86		0.62	0.07		Flavian	Bedding mortar	Stoa of the springs	
SS4			0.18	0.22	0.46	0.46	0.25	0.28	0.02		0.16		0.24	0.06		Flavian	Bedding mortar	Stoa of the springs	
SS5	0.42		0.15	0.22		0.54		0.96	0.18				0.11	0.1		Flavian	Coating	Stoa of the springs	cocciopesto
GB2	0.5	0.09	0.2	0.22		0.3	0.2		0.25	0.4	0.9		0.13	0.12		Flavian	Bedding mortar	Great building	cocciopesto
NT1			0.17	0.1					0.07				0.05	0.05		Severan	Bedding mortar	Nymphae um of the tritons	cocciopesto
NT2	0.28		0.18	0.16		0.3	0.59		0.75				0.02	0.11		Severan	Bedding mortar	Nymphae um of the tritons	cocciopesto
NT3	0.11		0.05	0.05		0.07	0.18		0.08				0.04	0.04		Severan	Bedding mortar	Nymphae um of the tritons	cocciopesto
TH1	0.5		26	0.1			0.2		0.08				0.05	0.05		Severan	Bedding mortar	Theatre	
TH2	0.33		0.12	0.14	0.3	0.55	0.07	0.32	0.1	0.18	0.14	0.15	0.09	0.11		Severan	Bedding mortar	Theatre	

SA-A4	2.21	0.3	0.9	0.27	0.4		0.25	0.35	0.22	0.2	0.21	0.69	0.26	0.18		Severan	Bedding mortar	Temple of Apollo	
SA-A1	0.25	0.17	0.12	0.17	0.29	0.25	0.02	0.19	0.14	0.19	0.6			0.1		Severan	Bedding mortar	Temple of Apollo, Building A	
SA-A2	0.2	0.41	0.24	0.03		0.2	0.21	0.28	0.02	0.3	0.68	0.74		0.21		Severan	Bedding mortar	Temple of Apollo Building A	
NT4	0.15	0.1	0.06	0.02	0.3		0.03	0.6	0.02	0.16	0.05		0.12	0.09		Severan	Grouting	Nymphaeum of the tritons	
NA3	0.19	0.1	0.08	0.14	0.22	0.12	0.16	0.31	0.16	0.3				0.12	1.28	Late Antonine	In-fill mortar	Nymphaeum of temple Apollo	
SA-A5			0.12	0.14			0.27				0.25		0.14	0.11		Early-byzantine	Bedding mortar	Temple of Apollo, Building A	cocciopesto
P6	0.15	0.1	0.06	0.18	0.38	0.12	0.16	0.18	0.22	0.3	0.95	0.52		0.14	2.86	Early-byzantine	Bedding mortar	Ploutonion	
SP4	0.34	0.17	0.26	0.16		0.5	0.34	0.11	0.15	0.6			0.14	0.09		Early-byzantine	Bedding mortar	St. Philip Church	
SP31	0.21	0.39	0.3	0.24		0.06			0.62			0.8	0.04	0.01		Early-byzantine	inner plaster	St. Philip Church	
SP33	0.61		0.19	0.06	0.63				0.26				0.03	0.03		Early-byzantine	Grouting	St. Philip Church	cocciopesto
SP11			0.25	0.05					0.05					0.06		Early-byzantine	external plaster	St. Philip Church	
SP29			0.27	0.1			0.29		0.05				0.4	0.1		Early-byzantine	external plaster	St. Philip Church	
SP7	0.1	0.35					0.3	0.3					0.02	0.02		Middle byzantine	Bedding mortar	St. Philip Church	cocciopesto
	gneiss	amphibolite	schist	micrite limestone	breccias	meta-sands tone	travertine	calc-schist	marble	serpentine	Gabbro-like	fossiliferous limestone	ceramic fragments	qz-quartzite					
Untill Flavian	0.24	0.37	0.18	0.16	0.34	0.33	0.18	0.33	0.12	0.26	0.55	1.27	0.3	0.1					
Severan	0.5	0.24	3.09	0.11	0.32	0.27	0.19	0.35	0.16	0.21	0.34	0.53	0.09	0.1					
Byzantine	0.26	0.22	0.19	0.13	0.41	0.2	0.25	0.22	0.21	0.4	0.6	0.66	0.13	0.07					

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sample	Gneiss	amphibolite	schist	micritic limestone	breccias	meta-sandstone	travertine	calc-schist	marble	serpentine	Gabbro-like	fossiliferous limestone	ceramic fragments	qz-quartzite	phyllite	dating	function	building	cocciopesto
SA-C1	3.1	0.64	2.56	3.4		5.37	2.7	3.36	1.9	0.7				2.45		Julio-Claudian	Bedding mortar	Temple of Apollo Building C	
SA-C2	1.78	1.4	5.5	6.13		0.75	1.1	3.22	6.71	1.16		4.03		1.4		Julio-Claudian	Bedding mortar	Temple of Apollo Building C	
P2	10.28	0.58	1.36	2.16		3.26	2.93	4.52	2.41	2.3		1.2		7.04		Imperial	Bedding mortar	Ploutonion	
P4	1.92		7.01	1.57		1.05	5.54	4.26	3.78	0.59				2.45		Imperial	Bedding mortar	Ploutonion	
SS1	0.82		0.86	1.71	0.88	0.76	1.5	1.86	1.13			2.22	0.8	1.5		Flavian	Bedding mortar	Stoa of the springs	cocciopesto
SS2	0.77		2.1	1.88	2.7	1.46	3	3.7	3.35	1.91	1.5			3.8		Flavian	Bedding mortar	Stoa of the springs	
SS3	2.2		5.9	2.5	1.3	3.1	2.5	2.6	7.24	1.9	1.48		0.79	2.84		Flavian	Bedding mortar	Stoa of the springs	
SS4			0.54	0.8	0.75	0.67	3.5	1.98	4.59		0.47		1.45	0.43		Flavian	Bedding mortar	Stoa of the springs	
SS5	0.95		0.6	0.83		0.74		1.7	0.31				13.56	0.59		Flavian	Coating	Stoa of the springs	cocciopesto
GB2	1.13	0.25	0.82	1.2		0.9	0.7		7.66	0.77	1.4		5.85	2.05		Flavian	Bedding mortar	Great building	cocciopesto
NT1			0.93	0.7					0.5				2.7	0.4		Severan	Bedding mortar	Nymphaeum of the tritons	cocciopesto
NT2	1		1.47	1.3		0.9	2.48		1.4				4.57	1.06		Severan	Bedding mortar	Nymphaeum of the tritons	cocciopesto
NT3	0.47		0.22	0.4		0.3	0.8		0.2				1.37	0.5		Severan	Bedding mortar	Nymphaeum of the tritons	cocciopesto
TH1	1		0.63	0.8			0.4		1				8.9	0.6		Severan	Bedding mortar	Theatre	
TH2	3		0.93	4.14	1.49	1.95	1.5	2.22	2.6	0.7	0.8	2.22	0.95	2.65		Severan	Bedding mortar	Theatre	
SA-A4	2.05	0.7	1.97	2.37	2.8		4	0.72	9.3	0.35	2.52	2.02	0.84	1.73		Severan	Bedding mortar	Temple of Apollo	
SA-A1	2.39	1.03	5.1	1.55	1.44	1.33	5.04	2.54	1.21	2.97	3.9			2.01		Severan	Bedding mortar	Temple of Apollo, Building A	
SA-A2	1.92	0.94	2.15	5.9		3.31	7.32	2.62	6.08	0.7	3.66	1.02		2.1		Severan	Bedding mortar	Temple of Apollo Building A	
NT4	0.92	0.72	1.76	2.2	2.11		6.57	1.18	2.46	0.75	0.77		2	0.93		Severan	Grouting	Nymphaeum of the tritons	
NA3	1.1	0.36	3.7	1.6	0.96	1.69	0.8	10.71	1.8	0.5				1.36	3.72	Late Antonine	In-fill mortar	Nymphaeum of temple Apollo	

SA-A5		0.56		0.48		0.49		0.62		10.46		0.91		Early-byzantine	Bedding mortar	Temple of Apollo, Building A	cocciopesto	
P6	1.82	0.5	3.7	1.18	0.55	2.25	4.64	3.1	5.15	1.2	2.86	4.6	7.86	4.15	Early-byzantine	Bedding mortar	Ploutonion	
SP4	5.52	0.7	1.15	0.91		1.01	2.1	2.02	1.51	0.8		0.33	1.34	Early-byzantine	Bedding mortar	St. Philip Church		
SP31	1.94	0.78	0.66	2.52		0.88			1.07			1.28	4.8	0.66	Early-byzantine	inner plaster	St. Philip Church	
SP33	0.8		0.54	0.9	0.81				1.91				3	0.35	Early-byzantine	Grouting	St. Philip Church	cocciopesto
SP11			2.3	0.5					0.83				0.7		Early-byzantine	external plaster	St. Philip Church	
SP29			0.82	0.6			0.47		0.9				0.5	0.5	Early-byzantine	external plaster	St. Philip Church	
SP7	1.25	0.47					1.84	0.5					10.48	2.32	Middle byzantine	Bedding mortar	St. Philip Church	cocciopesto
	gneiss	amphibolite	schist	micritic limestone	brecias	meta-sandstone	Travertine	calc-schist	marble	serpentine	Gabbro-like	fossiliferous limestone	ceramic fragments	qz-quartzite				
Untill Flavian	2.55	0.72	2.72	2.22	1.41	1.81	2.61	3.02	3.91	1.33	1.21	2.48	4.49	2.45				
Severan	1.59	0.85	1.68	2.15	1.96	1.558	3.51	1.85	2.75	1.09	2.33	1.75	3.05	1.33				
Byzantine	2.07	0.56	1.68	1.08	0.77	1.46	1.72	4.08	1.88	0.83	1.74	2.94	4.93	1.78				

- Circularity

sample	gneiss	amphibolite	schist	micrite limestone	brecias	meta-sandstone	travertine	calc-schist	marble	serpentine	Gabbro-like	fossiliferous limestone	ceramic fragments	qz-quartzite	Phyllites	dating	function	building	cocciopesto
SA-C1	0.56	0.59	0.37	0.61		0.53	0.56	0.59	0.59	0.75				0.57		Julio-Claudian	Bedding mortar	Temple of Apollo Building C	
SA-C2	0.64	0.22	0.55	0.5		0.68	0.73	0.48	0.61	0.56		0.43		0.67		Julio-Claudian	Bedding mortar	Temple of Apollo Building C	
P2	0.64	0.63	0.58	0.63		0.6	0.54	0.61	0.63	0.6		0.68		0.66		Imperial	Bedding mortar	Ploutonion	
P4	0.66		0.55	0.68		0.68	0.56	0.61	0.61	0.78				0.65		Imperial	Bedding mortar	Ploutonion	
SS1	0.68		0.6	0.7	0.56	0.69	0.57	0.68	0.69			0.62	0.82	0.7		Flavian	Bedding mortar	Stoa of the springs	cocciopesto
SS2	0.67		0.56	0.63	0.6	0.52	0.53	0.63	0.57	0.66	0.65			0.61		Flavian	Bedding mortar	Stoa of the springs	
SS3	0.62		0.53	0.67	0.68	0.63	0.67	0.56	0.69	0.59	0.45		0.68	0.66		Flavian	Bedding mortar	Stoa of the springs	
SS4			0.64	0.63	0.55	0.73	0.7	0.57	0.51		0.78		0.55	0.64		Flavian	Bedding mortar	Stoa of the springs	
SS5	0.66		0.57	0.54		0.43		0.61	0.64				0.53	0.69		Flavian	Coating	Stoa of the springs	cocciopesto
GB2	0.63	0.59	0.66	0.76		0.66	0.65		0.6	0.73	0.74		0.63	0.63		Flavian	Bedding mortar	Great building	cocciopesto
NT1			0.48	0.58					0.62				0.63	0.75		Severan	Bedding mortar	Nymphaeum of the tritons	cocciopesto
NT2	0.63		0.58	0.72		0.59	0.61		0.74				0.6	0.65		Severan	Bedding mortar	Nymphaeum of the tritons	cocciopesto
NT3	0.54		0.53	0.69		0.56	0.69		0.66				0.64	0.7		Severan	Bedding mortar	Nymphaeum of the tritons	cocciopesto
TH1	0.38		0.51	0.57			0.47		0.49				0.53	0.63		Severan	Bedding mortar	Theatre	
TH2	0.55		0.64	0.63	0.65	0.4	0.64	0.62	0.62	0.68	0.67	0.53	0.69	0.63		Severan	Bedding mortar	Theatre	
SA-A4	0.64	0.64	0.66	0.75	0.65		0.64	0.72	0.63	0.73	0.68	0.73	0.7	0.67		Severan	Bedding mortar	Temple of Apollo	

SA-A1	0.66	0.51	0.49	0.68	0.64	0.69	0.53	0.61	0.65	0.61	0.77		0.66	Severan	Bedding mortar	Temple of Apollo, Building A	
SA-A2	0.63	0.64	0.67	0.29		0.56	0.58	0.6	0.51	0.61	0.66	0.23	0.63	Severan	Bedding mortar	Temple of Apollo Building A	
NT4	0.61	0.69	0.49	0.59	0.59		0.51	0.69	0.57	0.7	0.7		0.57	0.64	Severan	Grouting	Nymphaeum of the tritons
NA3	0.62	0.64	0.61	0.68	0.54	0.62	0.66	0.73	0.59	0.71			0.69	0.51	Early-byzantine	In-fill mortar	Nymphaeum of temple Apollo
SA-A5			0.59	0.72			0.67				0.39		0.59	0.62	Early-byzantine	Bedding mortar	Temple of Apollo, Building A cocchiopesto
P6	0.66	0.46	0.55	0.71	0.64	0.63	0.64	0.68	0.6	0.66	0.42	0.66		0.66	0.73	Early-byzantine	Bedding mortar Ploutonion
SP4	0.4	0.31	0.46	0.49		0.45	0.41	0.44	0.42	0.51			0.49	0.51	Early-byzantine	Bedding mortar	St. Philip Church
SP31	0.31	0.26	0.37	0.55		0.38			0.53			0.49	0.54	0.59	Early-byzantine	inner plaster	St. Philip Church
SP33	0.4		0.42	0.5	0.38				0.36				0.48	0.66	Early-byzantine	Grouting	St. Philip Church cocchiopesto
SP11			0.37	0.48					0.43					0.5	Early-byzantine	external plaster	St. Philip Church
SP29			0.35	0.47			0.54		0.46				0.39	0.52	Early-byzantine	external plaster	St. Philip Church
SP7	0.68	0.78					0.63	0.77					0.5	0.66	Middle byzantine	Bedding mortar	St. Philip Church cocchiopesto

	gneiss	amphibolite	schist	micritic limestone	breccias	metasandstone	travertine	calcschist	marble	serpentine	Gabbro-like	fossiliferous limestone	ceramic fragments	qz-quartzite
Untill Flavian	0.64	0.51	0.56	0.64	0.6	0.62	0.61	0.59	0.61	0.67	0.65	0.58	0.64	0.65
Severan	0.58	0.62	0.56	0.61	0.63	0.56	0.58	0.65	0.61	0.67	0.69	0.5	0.62	0.66
Byzantine	0.51	0.49	0.46	0.57	0.52	0.52	0.59	0.66	0.48	0.63	0.4	0.57	0.49	0.6

- Roundness

sample	gneiss	amphibolite	schist	micritic limestone	breccias	metasandstone	travertine	calc-schist	marble	serpentine	Gabbro-like	fossiliferous limestone	ceramic fragments	qz-quartzite	Phyllites	dating	function	building	cocciopesto
SA-C1	0.43	0.65	0.41	0.63		0.78	0.62	0.66	0.65	0.68				0.59		Julio-Claudian	Bedding mortar	Temple of Apollo Building C	
SA-C2	0.47	0.55	0.57	0.57		0.74	0.68	0.51	0.64	0.52		0.32		0.65		Julio-Claudian	Bedding mortar	Temple of Apollo Building C	
P2	0.6	0.53	0.44	0.55		0.57	0.6	0.69	0.66	0.62		0.54		0.67		Imperial	Bedding mortar	Ploutonion	
P4	0.67		0.41	0.66		0.67	0.62	0.64	0.63	0.69				0.66		Imperial	Bedding mortar	Ploutonion	
SS1	0.62		0.44	0.65	0.86	0.53	0.47	0.67	0.67			0.8	0.9	0.64		Flavian	Bedding mortar	Stoa of the springs	cocciopesto
SS2	0.54		0.48	0.67	0.7	0.59	0.61	0.64	0.62	0.61	0.71			0.63		Flavian	Bedding mortar	Stoa of the springs	
SS3	0.59		0.38	0.66	0.81	0.58	0.66	0.59	0.68	0.6	0.54		0.86	0.65		Flavian	Bedding mortar	Stoa of the springs	
SS4			0.52	0.66	0.58	0.72	0.64	0.61	0.54		0.7		0.61	0.68		Flavian	Bedding mortar	Stoa of the springs	
SS5	0.5		0.47	0.51		0.85		0.58	0.77				0.6	0.71		Flavian	Coating	Stoa of the springs	cocciopesto
GB2	0.45	0.41	0.61	0.71		0.55	0.66		0.65	0.55	0.62		0.6	0.58		Flavian	Bedding mortar	Great building	cocciopesto
NT1			0.46	0.61					0.67				0.64	0.73		Severan	Bedding mortar	Nymphaeum of the tritons	cocciopesto
NT2	0.67		0.38	0.71		0.68	0.61		0.52				0.58	0.59		Severan	Bedding mortar	Nymphaeum of the tritons	cocciopesto
NT3	0.4		0.42	0.66		0.49	0.73		0.61				0.61	0.63		Severan	Bedding mortar	Nymphaeum of the tritons	cocciopesto
TH1	0.49		0.55	0.51			0.51		0.61				0.66	0.61		Severan	Bedding mortar	Theatre	
TH2	0.44		0.45	0.6	0.68	0.25	0.61	0.55	0.61	0.63	0.57	0.42	0.59	0.64		Severan	Bedding mortar	Theatre	
SA-A4	0.59	0.53	0.59	0.66	0.67		0.61	0.6	0.65	0.61	0.57	0.68	0.56	0.65		Severan	Bedding mortar	Temple of Apollo	
SA-A1	0.57	0.46	0.39	0.65	0.7	0.68	0.58	0.59	0.65	0.55	0.75			0.63		Severan	Bedding mortar	Temple of Apollo, Building A	
SA-A2	0.52	0.44	0.53	0.52		0.59	0.64	0.62	0.59	0.43	0.78	0.86		0.59		Severan	Bedding mortar	Temple of Apollo Building A	
NT4	0.57	0.58	0.33	0.6	0.71		0.62	0.66	0.61	0.71	0.61		0.49	0.61		Severan	Grouting	Nymphaeum of the tritons	
NA3	0.58	0.56	0.48	0.65	0.66	0.59	0.6	0.72	0.61	0.68				0.64	0.33	Late Antonine	In-fill mortar	Nymphaeum of temple Apollo	
SA-A5			0.41	0.66			0.53				0.32		0.6	0.65		Early-byzantine	Bedding mortar	Temple of Apollo, Building A	cocciopesto
P6	0.61	0.33	0.41	0.66	0.75	0.56	0.63	0.64	0.61	0.68	0.3	0.66		0.64	0.75	Early-byzantine	Bedding mortar	Ploutonion	

SP4	0.45	0.21	0.53	0.66		0.64	0.51	0.47	0.66	0.68			0.39	0.57	Early-byzantine	Bedding mortar	St. Philip Church	
SP31	0.32	0.46	0.43	0.75		0.37			0.6		0.6		0.61	0.6	Early-byzantine	inner plaster	St. Philip Church	
SP33	0.76		0.52	0.64	0.67				0.65				0.59	0.67	Early-byzantine	Grouting	St. Philip Church	cocciopesto
SP11			0.39	0.6					0.64					0.62	Early-byzantine	external plaster	St. Philip Church	
SP29			0.32	0.58			0.59		0.69				0.73	0.71	Early-byzantine	external plaster	St. Philip Church	
SP7	0.55	0.7					0.56	0.81					0.59	0.56	Middle byzantine	Bedding mortar	St. Philip Church	cocciopesto
	gneiss	amphibolite	schist	micrite limestone	breccias	meta-sandstone	travertine	calc-schist	marble	serpentine	Gabbro-like	fossiliferous limestone	ceramic fragments	qz-quartzite				
Untill Flavian	0.54	0.54	0.47	0.62	0.74	0.66	0.62	0.62	0.65	0.61	0.64	0.55	0.71	0.65				
Severan	0.53	0.5	0.46	0.61	0.69	0.54	0.61	0.6	0.61	0.59	0.66	0.65	0.59	0.63				
Byzantine	0.55	0.45	0.43	0.65	0.69	0.54	0.57	0.66	0.64	0.68	0.31	0.63	0.585	0.63				

- Aspect Ratio

sample	gneiss	amphibolite	schist	micritic limestone	breccias	metasandstone	travertine	calc-schist	marble	serpentine	Gabbro-like	fossiliferous limestone	ceramic fragments	quartzite	Phyllites	dating	function	building	cocciopesto
SA-C1	2.38	1.66	3.1	1.68		1.31	1.8	1.63	1.66	1.5				1.85		Julio-Claudian	Bedding mortar	Temple of Apollo Building C	
SA-C2	2.1	1.79	1.94	1.89		1.34	1.53	2.64	1.95	2		3.1		1.6		Julio-Claudian	Bedding mortar	Temple of Apollo Building C	
P2	1.81	1.87	2.6	1.89		1.85	1.76	1.5	1.57	1.72		1.84		1.58		Imperial	Bedding mortar	Ploutonion	
P4	1.56		2.84	1.59		1.6	1.68	1.79	1.66	1.44				1.62		Imperial	Bedding mortar	Ploutonion	
SS1	1.79		2.38	1.67	1.15	2.3	2.69	1.7	1.63			1.24	1.1	1.64		Flavian	Bedding mortar	Stoa of the springs	cocciopesto
SS2	1.97		2.46	1.55	1.47	1.81	1.92	1.63	1.7	1.79	1.49			1.68		Flavian	Bedding mortar	Stoa of the springs	
SS3	1.98		2.85	1.71	1.26	1.77	1.71	1.79	1.56	1.89	1.7		1.15	1.67		Flavian	Bedding mortar	Stoa of the springs	
SS4			2.26	1.58	1.72	1.37	1.71	1.71	2.18		1.45		1.8	1.61		Flavian	Bedding mortar	Stoa of the springs	
SS5	2		2.31	2.23		1.16		1.71	1.29				1.78	1.42		Flavian	Coating	Stoa of the springs	cocciopesto
GB2	2.19	2.4	1.84	1.44		2.03	1.57		1.67	1.81	1.59		1.76	1.82		Flavian	Bedding mortar	Great building	cocciopesto
NT1			3.03	1.93					1.55				1.7	1.44		Severan	Bedding mortar	Nymphaeum of the tritons	cocciopesto
NT2	1.62		2.65	1.44		1.62	1.64		1.92				1.91	1.79		Severan	Bedding mortar	Nymphaeum of the tritons	cocciopesto
NT3	2.5		2.55	1.64		2.2	1.46		1.67				1.79	1.69		Severan	Bedding mortar	Nymphaeum of the tritons	cocciopesto
TH1	2.06		2.15	2.17			1.96		1.86				1.62	1.75		Severan	Bedding mortar	Theatre	
TH2	2.41		2.38	1.77	1.49	3.95	1.86	1.96	1.76	1.66	1.9	2.93	1.91	1.72		Severan	Bedding mortar	Theatre	
SA-A4	1.79	1.9	1.74	1.54	1.55		1.87	1.65	1.58	1.62	1.76	1.49	1.87	1.57		Severan	Bedding mortar	Temple of Apollo	

Table S4. SEM-EDS microchemical data

NT2										
Na	Mg	Al	Si	P	S	K	Ca	Mn	Fe	Area
0.00	7.18	2.90	8.77	0.00	1.51	0.00	79.64	0.00	0.00	react. rim/binder
0.00	7.62	3.22	9.48	0.00	1.66	0.00	77.78	0.00	0.00	react. rim/binder
0.00	6.10	2.84	8.20	0.00	1.79	0.00	81.06	0.00	0.00	react. rim/binder
0.00	10.97	4.28	14.05	0.00	1.92	0.00	67.65	0.00	0.91	react. rim/binder
0.00	9.44	3.63	10.68	0.00	1.85	0.00	74.14	0.00	0.00	react. rim/binder
0.00	6.09	2.58	6.96	0.00	1.76	0.00	81.41	0.00	0.89	react. rim/binder
0.00	1.92	0.60	3.80	0.00	1.49	0.00	92.20	0.00	0.00	lime lump
0.00	2.64	1.22	4.29	0.00	1.60	0.00	90.25	0.00	0.00	lime lump
0.00	3.09	1.16	3.21	0.00	1.55	0.00	91.00	0.00	0.00	lime lump
0.00	0.88	0.00	3.22	0.00	0.84	0.00	95.06	0.00	0.00	lime lump
0.00	1.65	0.62	1.37	0.00	1.90	0.00	94.44	0.00	0.00	lime lump
0.00	13.22	5.40	15.09	0.00	2.50	0.00	63.55	0.00	0.00	react. rim/binder
0.00	12.95	5.51	15.55	0.00	2.71	0.00	62.12	0.00	0.75	react. rim/binder
0.00	11.72	5.04	13.98	0.00	2.43	0.00	66.16	0.00	0.67	react. rim/binder
0.00	10.94	4.89	12.01	0.00	2.63	0.00	69.53	0.00	0.00	react. rim/binder
0.00	15.00	6.11	17.99	0.00	2.68	0.31	56.93	0.00	0.97	react. rim/binder
0.00	10.27	4.32	13.95	0.00	2.27	0.00	68.94	0.00	0.00	react. rim/binder
0.00	13.33	5.08	15.60	0.00	2.44	0.00	63.20	0.00	0.00	react. rim/binder
0.00	14.93	6.81	18.31	0.00	2.72	0.00	56.87	0.00	0.00	react. rim/binder
0.00	4.81	1.65	6.19	0.00	1.78	0.00	85.57	0.00	0.00	react. rim/binder
0.00	4.49	1.48	8.01	0.00	1.66	0.00	84.37	0.00	0.00	react. rim/binder
0.00	5.57	2.12	8.05	0.00	2.43	0.00	81.56	0.00	0.00	react. rim/binder
0.00	3.78	1.57	5.10	0.00	2.59	0.00	86.96	0.00	0.00	lime lump
0.00	1.26	0.50	1.97	0.00	1.90	0.00	93.68	0.00	0.00	lime lump
0.00	4.21	1.90	4.88	0.00	2.24	0.00	86.77	0.00	0.00	lime lump
0.00	2.08	0.54	1.71	0.00	2.41	0.00	93.27	0.00	0.00	lime lump
0.00	2.12	0.53	2.95	0.00	2.88	0.00	91.52	0.00	0.00	lime lump
0.00	3.87	1.02	4.28	0.00	1.52	0.00	89.31	0.00	0.00	lime lump

0.00	2.60	0.74	2.18	0.00	2.15	0.00	92.33	0.00	0.00	lime lump	0.06
0.00	7.88	3.21	10.27	0.00	2.25	0.00	76.39	0.00	0.00	react. rim/binder	0.03
0.00	3.68	1.39	5.94	0.00	3.24	0.00	85.43	0.00	0.00	react. rim/binder	0.16
0.00	8.08	2.51	9.47	0.00	2.39	0.00	77.32	0.00	0.00	react. rim/binder	0.56
0.00	8.39	3.54	11.42	0.00	2.05	0.28	72.88	0.00	1.05	react. rim/binder	0.08
0.00	11.52	3.59	14.08	0.00	2.17	0.00	67.64	0.00	0.79	react. rim/binder	0.14
0.00	0.00	0.00	0.82	0.00	1.07	0.00	98.11	0.00	0.00	lime lump	0.01
0.00	0.00	0.00	0.00	0.00	0.82	0.00	99.18	0.00	0.00	lime lump	0.00
0.00	1.23	0.00	2.35	0.00	1.02	0.00	93.95	0.00	1.45	lime lump	0.04
0.00	0.00	0.00	0.97	0.00	0.00	0.00	99.03	0.00	0.00	lime lump	0.01
0.00	1.35	0.00	5.39	0.00	0.99	0.00	92.27	0.00	0.00	lime lump	0.06
0.00	0.69	0.00	1.34	0.00	0.88	0.00	97.09	0.00	0.00	lime lump	0.01
0.00	0.69	0.00	6.82	0.00	1.33	0.00	91.16	0.00	0.00	lime lump	0.07
0.00	0.78	0.00	0.00	0.00	0.00	0.00	99.22	0.00	0.00	lime lump	0.00
0.00	0.87	0.00	1.04	0.00	1.05	0.00	97.03	0.00	0.00	lime lump	0.01
0.00	0.69	0.00	0.82	0.00	1.56	0.00	96.93	0.00	0.00	lime lump	0.01
0.00	0.89	0.00	1.00	0.00	1.24	0.00	96.47	0.00	0.00	lime lump	0.01

SS5

Na	Mg	Al	Si	P	S	K	Ca	Mn	Fe	Area	HI
0.00	3.10	8.95	20.79	0.00	0.68	1.15	58.18	0.00	6.91	react. rim/binder	0.60
0.00	1.25	0.38	0.60	0.00	2.32	0.00	95.45	0.00	0.00	react. rim/binder	0.01
0.00	3.54	7.66	20.18	0.00	0.80	1.47	60.15	0.00	6.19	react. rim/binder	0.53
0.00	1.80	4.10	10.12	0.00	0.90	0.81	80.26	0.00	2.01	react. rim/binder	0.20
0.74	1.82	12.00	19.70	0.00	0.70	1.82	58.43	0.00	4.79	react. rim/binder	0.61
0.00	1.18	3.80	11.29	0.00	1.02	0.51	80.96	0.00	1.24	react. rim/binder	0.20
0.00	1.54	1.72	19.02	0.00	0.00	0.00	76.00	0.00	0.00	react. rim/binder	0.27
0.00	0.98	2.53	8.18	0.00	0.71	0.00	86.75	0.00	0.85	react. rim/binder	0.13
0.00	1.01	5.24	8.51	0.00	2.02	1.60	81.61	0.00	0.00	react. rim/binder	0.17
0.00	1.58	2.41	7.04	0.00	1.29	0.00	86.96	0.00	0.73	react. rim/binder	0.11
0.00	0.44	0.39	0.63	0.00	0.73	0.00	97.81	0.00	0.00	lime lump	0.01
0.48	0.68	0.00	1.11	0.00	0.70	0.00	97.03	0.00	0.00	lime lump	0.01
0.00	1.37	0.61	1.01	0.00	0.00	0.00	97.01	0.00	0.00	lime lump	0.02
0.00	1.10	0.76	2.69	0.00	1.18	0.00	94.26	0.00	0.00	lime lump	0.04

0.00	0.70	1.69	5.33	0.00	0.00	0.00	91.40	0.00	0.00	lime lump	0.08
0.00	1.29	2.22	5.48	0.00	0.81	0.51	88.16	0.00	1.52	lime lump	0.10
0.57	0.00	1.02	1.90	0.00	0.00	0.00	96.51	0.00	0.00	lime lump	0.03
0.58	0.00	0.64	1.61	0.00	0.51	0.00	96.66	0.00	0.00	lime lump	0.02
0.41	0.48	0.00	0.95	0.00	0.00	0.00	98.16	0.00	0.00	lime lump	0.01
0.00	0.72	3.36	6.56	0.94	0.00	0.00	88.42	0.00	0.00	lime lump	0.11
0.00	0.48	0.98	2.16	1.34	0.00	0.00	95.04	0.00	0.00	lime lump	0.03
0.00	0.59	1.04	2.29	1.34	0.00	0.00	94.74	0.00	0.00	lime lump	0.03
0.00	0.49	1.53	3.25	1.04	0.00	0.00	93.69	0.00	0.00	lime lump	0.05
0.00	0.54	1.08	2.20	1.59	0.00	0.00	94.60	0.00	0.00	lime lump	0.03
0.00	0.61	1.72	3.71	0.83	0.00	0.00	93.13	0.00	0.00	lime lump	0.06
0.00	0.00	1.19	2.69	0.90	0.00	0.00	95.22	0.00	0.00	lime lump	0.04

SP33

Na	Mg	Al	Si	P	S	K	Ca	Mn	Fe	Area	HI
0.79	0.81	0.53	2.07	0.00	0.92	0.36	94.00	0.00	0.00	lime lump	0.03
0.71	0.68	0.00	1.26	0.00	0.79	0.00	96.05	0.00	0.00	lime lump	0.01
1.08	1.28	0.74	3.24	0.00	1.04	0.38	91.39	0.00	0.00	lime lump	0.04
0.35	4.52	0.41	4.36	0.00	0.88	0.00	89.47	0.00	0.00	lime lump	0.05
1.05	1.80	7.77	17.57	0.00	0.76	2.03	64.06	0.57	3.63	react. rim/binder	0.44
0.74	3.05	2.94	14.37	0.41	0.88	0.59	71.07	0.00	5.56	react. rim/binder	0.31
1.05	1.61	0.00	3.46	0.00	1.08	0.00	91.17	0.00	0.81	react. rim/binder	0.05
1.06	1.19	2.31	9.02	0.00	0.71	0.50	84.71	0.00	0.00	react. rim/binder	0.13
0.00	0.71	0.65	3.12	0.00	0.00	0.46	94.50	0.00	0.00	react. rim/binder	0.04
0.46	0.63	1.79	5.51	0.00	0.00	0.00	90.50	0.00	0.76	react. rim/binder	0.09
0.60	0.44	1.23	4.45	0.00	0.64	0.44	90.72	0.00	1.05	react. rim/binder	0.07
0.00	0.87	1.93	6.40	0.00	0.90	0.56	87.42	0.00	1.19	react. rim/binder	0.11
0.00	0.85	2.10	5.07	0.00	0.00	0.37	90.11	1.13	0.00	react. rim/binder	0.08
0.00	1.43	2.95	9.66	0.00	0.49	0.64	83.16	0.00	1.40	react. rim/binder	0.17
0.43	0.50	1.02	3.82	0.00	0.72	0.00	92.92	0.00	0.00	react. rim/binder	0.05
0.00	2.24	3.83	12.67	0.00	0.00	0.56	77.86	0.00	2.37	react. rim/binder	0.24

SP31

Na	Mg	Al	Si	P	S	K	Ca	Mn	Fe	Area	HI
0.00	1.28	5.83	17.57	0.00	0.00	0.79	73.47	0.00	1.06	react. rim/binder	0.33

0.00	1.33	6.49	18.39	0.00	0.00	0.80	72.99	0.00	0.00	react. rim/binder	0.33
0.00	0.96	5.01	14.75	0.00	0.00	0.61	78.62	0.00	0.00	react. rim/binder	0.25
0.00	0.93	6.72	23.82	0.00	0.00	1.03	67.52	0.00	0.00	react. rim/binder	0.45
0.00	1.35	6.52	21.27	0.00	0.00	0.90	69.07	0.00	0.87	react. rim/binder	0.41
0.00	0.94	1.56	3.35	0.00	0.00	1.27	92.88	0.00	0.00	react. rim/binder	0.05
0.00	1.51	3.23	7.30	0.00	0.00	0.00	87.98	0.00	0.00	react. rim/binder	0.12
0.00	1.72	3.95	10.08	0.00	0.00	0.63	81.36	0.00	2.28	react. rim/binder	0.20
0.00	1.08	3.47	11.44	0.00	0.00	0.67	83.33	0.00	0.00	react. rim/binder	0.18
0.00	0.58	0.00	2.92	0.00	0.00	0.00	95.04	0.00	1.47	react. rim/binder	0.05
0.00	1.55	5.29	17.10	0.00	0.00	1.04	73.56	1.39	0.00	react. rim/binder	0.30
0.00	1.51	6.01	18.37	0.00	0.00	1.19	71.77	0.00	1.15	react. rim/binder	0.35
0.00	0.87	2.93	7.63	0.00	0.00	0.00	88.62	0.00	0.00	react. rim/binder	0.12
0.00	1.65	6.47	28.63	0.00	0.00	0.82	62.38	0.00	0.00	react. rim/binder	0.55
0.00	9.81	6.89	21.28	0.00	0.00	0.53	49.64	0.00	11.85	react. rim/binder	0.67
0.00	0.48	2.30	7.55	0.00	0.00	0.00	89.70	0.00	0.00	react. rim/binder	0.11
0.00	0.39	0.00	0.39	0.00	0.00	0.00	99.22	0.00	0.00	lime lump	0.00
0.00	1.23	4.92	12.99	0.00	0.67	0.56	79.60	0.00	0.00	lime lump	0.22
0.00	0.73	1.16	2.70	0.00	0.00	0.00	95.40	0.00	0.00	lime lump	0.04
0.00	0.60	1.58	4.64	0.00	0.00	0.00	93.19	0.00	0.00	lime lump	0.07
0.00	0.00	4.38	10.08	0.00	0.00	0.00	85.54	0.00	0.00	lime lump	0.17
0.00	1.68	10.15	35.08	0.00	0.00	1.52	51.54	0.00	0.00	react. rim/binder	0.85
0.00	1.51	7.85	26.28	0.00	0.00	1.06	63.30	0.00	0.00	react. rim/binder	0.53
0.00	1.55	7.38	27.01	0.00	0.00	1.03	62.99	0.00	0.00	react. rim/binder	0.53
0.00	1.16	3.34	10.21	0.00	0.00	0.48	83.71	0.00	1.07	react. rim/binder	0.17
0.00	0.75	0.77	1.89	0.00	0.00	0.00	96.61	0.00	0.00	react. rim/binder	0.03
0.00	0.73	1.81	6.26	0.00	0.00	0.00	91.20	0.00	0.00	react. rim/binder	0.09
0.00	0.76	3.22	11.65	0.00	0.00	0.43	82.85	0.00	1.09	react. rim/binder	0.19
0.00	0.96	3.99	14.39	0.00	0.00	0.54	80.13	0.00	0.00	react. rim/binder	0.23
0.00	1.26	5.96	20.92	0.00	0.65	0.80	69.53	0.00	0.92	react. rim/binder	0.39
0.00	2.19	8.75	22.12	0.00	0.00	0.49	63.25	0.00	3.16	react. rim/binder	0.52
0.00	1.19	4.64	14.07	0.00	0.00	0.70	78.50	0.00	0.89	react. rim/binder	0.25
0.00	2.79	4.07	8.91	0.00	0.74	0.41	83.04	0.00	0.00	react. rim/binder	0.15
0.00	0.61	3.67	11.22	0.00	1.03	0.31	78.74	0.00	4.42	react. rim/binder	0.24

0.00	0.85	4.72	17.79	0.00	0.55	0.66	75.45	0.00	0.00	react. rim/binder	0.30
0.00	0.76	3.43	13.50	0.00	0.00	0.58	81.73	0.00	0.00	react. rim/binder	0.21
0.36	2.25	7.77	25.36	0.00	0.68	1.13	60.16	0.00	2.29	react. rim/binder	0.57
0.48	1.10	8.46	31.48	0.00	0.00	1.45	55.84	0.00	1.17	react. rim/binder	0.72

P7

Na	Mg	Al	Si	P	S	K	Ca	Mn	Fe	Area	HI
0.00	2.23	0.00	8.35	0.00	0.68	0.00	88.74	0.00	0.00	binder	0.09
0.00	1.97	0.00	6.33	0.00	0.00	0.00	91.70	0.00	0.00	binder	0.07
0.00	2.53	0.00	5.84	0.00	0.60	0.00	91.02	0.00	0.00	binder	0.06
0.00	1.79	0.00	13.69	0.00	0.00	0.00	84.52	0.00	0.00	binder	0.16
0.00	2.77	1.00	7.78	0.00	1.51	0.00	86.18	0.00	0.76	binder	0.11
0.00	3.60	0.92	8.87	0.00	0.00	0.00	85.61	1.00	0.00	binder	0.11
0.38	5.38	0.99	11.64	0.00	0.63	0.00	79.91	0.00	1.07	binder	0.16
0.50	1.70	0.00	8.41	0.00	0.98	0.00	88.41	0.00	0.00	binder	0.09
0.00	3.49	0.00	9.46	0.00	1.51	0.00	85.54	0.00	0.00	binder	0.11
0.00	2.56	0.00	11.11	0.00	0.73	0.00	85.60	0.00	0.00	binder	0.13
0.00	1.58	0.00	21.46	0.00	0.77	0.00	76.19	0.00	0.00	binder	0.28
0.00	2.18	0.00	17.86	0.00	0.58	0.00	79.38	0.00	0.00	binder	0.22
0.00	2.16	0.00	11.59	0.00	0.78	0.00	85.47	0.00	0.00	binder	0.13
0.00	2.10	0.00	15.78	0.00	0.69	0.00	81.44	0.00	0.00	binder	0.19
0.00	2.20	0.00	22.02	0.00	0.60	0.00	75.17	0.00	0.00	lime lump	0.28
0.49	0.71	0.00	0.00	0.00	0.00	0.00	98.80	0.00	0.00	unburned lump	-
0.00	2.32	1.95	11.94	0.00	0.74	0.00	83.04	0.00	0.00	lime lump	0.16
0.00	2.56	0.76	10.88	0.00	0.83	0.00	83.51	0.00	1.03	lime lump	0.15
0.00	1.76	0.00	5.82	0.00	0.00	0.00	92.01	0.00	0.00	lime lump	0.06
0.50	2.13	1.15	11.11	0.00	0.68	0.00	84.00	0.00	0.00	lime lump	0.14
0.00	2.11	0.65	6.04	0.00	0.00	0.00	91.20	0.00	0.00	lime lump	0.07
0.00	3.36	1.21	9.12	0.00	0.00	0.00	86.32	0.00	0.00	lime lump	0.12
0.00	2.43	1.39	9.80	0.00	0.00	0.00	86.39	0.00	0.00	lime lump	0.13
0.00	3.01	2.80	11.45	0.00	0.51	0.59	80.63	0.00	1.01	lime lump	0.18
0.00	3.31	1.58	9.42	0.00	0.00	0.00	84.61	0.00	1.08	lime lump	0.14
0.00	3.67	1.50	9.14	0.00	0.00	0.00	85.69	0.00	0.00	lime lump	0.12
0.00	5.67	3.90	18.66	0.00	0.00	0.38	69.29	0.00	2.10	lime lump	0.33

0.00	2.24	0.72	6.14	0.00	0.00	0.00	90.89	0.00	0.00	lime lump	0.07
0.00	2.44	2.74	9.09	0.00	0.00	0.00	85.74	0.00	0.00	lime lump	0.13
0.00	1.88	1.28	6.87	0.00	0.00	0.00	89.09	0.89	0.00	lime lump	0.09
0.00	2.24	0.94	6.47	0.00	0.00	0.00	89.32	1.02	0.00	lime lump	0.08
0.00	3.23	1.23	8.53	0.00	0.00	0.00	87.01	0.00	0.00	lime lump	0.11
0.00	3.25	1.73	9.87	0.00	0.00	0.00	85.15	0.00	0.00	lime lump	0.13
0.00	1.91	0.50	5.89	0.00	0.63	0.00	91.07	0.00	0.00	lime lump	0.07
0.00	1.04	0.67	5.49	0.00	0.00	0.00	92.81	0.00	0.00	lime lump	0.07
0.00	1.80	0.00	5.88	0.00	0.87	0.00	90.64	0.00	0.00	lime lump	0.06
0.00	1.08	0.00	3.90	0.00	0.73	0.00	94.30	0.00	0.00	lime lump	0.04
0.00	2.52	0.97	6.97	0.00	0.00	0.00	88.57	0.00	0.97	lime lump	0.10

SA-C1

Na	Mg	Al	Si	P	S	K	Ca	Mn	Fe	Area	HI
0.00	1.19	0.00	0.00	0.00	0.00	0.00	98.81	0.00	0.00	lime lump	0.00
0.00	1.06	0.00	0.00	0.00	0.00	0.00	98.94	0.00	0.00	lime lump	0.00
0.00	2.09	0.00	0.00	0.00	0.00	0.00	97.91	0.00	0.00	lime lump	0.00
0.79	1.45	0.80	2.70	0.00	0.99	0.71	91.93	0.00	0.00	binder	0.04
1.93	1.71	2.07	4.70	0.00	1.02	0.83	86.46	0.00	0.00	binder	0.08
0.00	1.82	2.70	7.07	0.00	0.00	0.54	86.61	1.26	0.00	lime lump	0.11
0.00	1.63	2.12	5.63	0.00	0.00	0.00	89.52	1.10	0.00	lime lump	0.09
0.00	1.10	1.14	8.13	0.00	0.00	0.00	89.63	0.00	0.00	binder	0.10
0.00	1.74	2.87	6.38	0.00	0.00	0.54	88.47	0.00	0.00	binder	0.10
0.00	0.93	0.00	3.76	0.00	0.00	0.00	95.32	0.00	0.00	binder	0.04
0.00	1.30	0.00	2.86	0.00	0.00	0.00	95.84	0.00	0.00	binder	0.03
0.00	1.43	0.69	2.98	0.00	0.75	0.00	94.16	0.00	0.00	binder	0.04
0.00	1.39	2.84	15.39	0.00	0.00	0.73	79.65	0.00	0.00	binder	0.22

SA-A1

Na	Mg	Al	Si	P	S	K	Ca	Mn	Fe	Area	HI
0.00	1.51	1.21	1.84	0.00	0.00	0.00	94.69	0.73	0.00	lime lump	0.03
0.00	2.49	0.00	0.00	0.00	0.00	0.00	97.49	0.00	0.00	lime lump	0.00
0.00	1.98	0.00	1.36	0.00	0.00	0.00	96.66	0.00	0.00	lime lump	0.01
0.00	1.51	0.00	0.47	0.00	0.00	0.00	98.00	0.00	0.00	lime lump	0.00
0.00	3.01	0.00	0.71	0.00	0.00	0.00	96.28	0.00	0.00	lime lump	0.01

0.00	1.50	1.45	3.75	0.00	0.00	0.00	93.31	0.00	0.00	lime lump	0.05
0.00	0.82	0.00	0.54	0.00	0.00	0.00	98.66	0.00	0.00	lime lump	0.01
0.00	2.31	0.00	0.00	0.00	0.00	0.00	97.69	0.00	0.00	lime lump	0.00
0.00	1.82	1.13	2.82	0.00	0.00	0.00	94.22	0.00	0.00	lime lump	0.04
0.00	1.42	0.46	1.19	0.00	0.00	0.00	96.94	0.00	0.00	lime lump	0.02
0.00	22.32	2.34	7.83	0.00	0.00	0.00	66.15	0.00	1.35	lime lump	0.13
0.00	32.75	1.79	4.23	0.00	0.00	0.60	60.63	0.00	0.00	lime lump	0.06
0.00	33.72	1.11	3.75	0.00	0.57	0.00	60.86	0.00	0.00	lime lump	0.05
0.00	31.74	2.02	7.41	0.00	0.00	0.32	57.67	0.00	0.82	binder	0.11
0.00	0.88	0.00	0.00	0.00	0.00	0.00	99.12	0.00	0.00	binder	0.00
0.00	0.67	0.00	0.00	0.00	0.00	0.00	99.35	0.00	0.00	binder	0.00
0.00	0.49	0.00	0.00	0.00	0.00	0.00	98.35	0.00	1.14	binder	0.01
0.00	1.08	0.00	0.00	0.00	0.00	0.00	98.92	0.00	0.00	binder	0.00

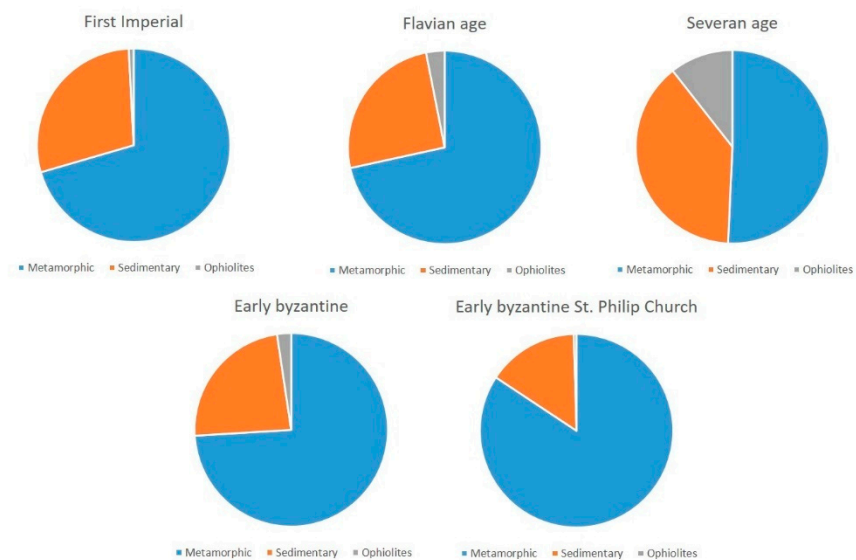


Figure S1. Composition of bedding mortars with aggregate composed by rock fragments over time.

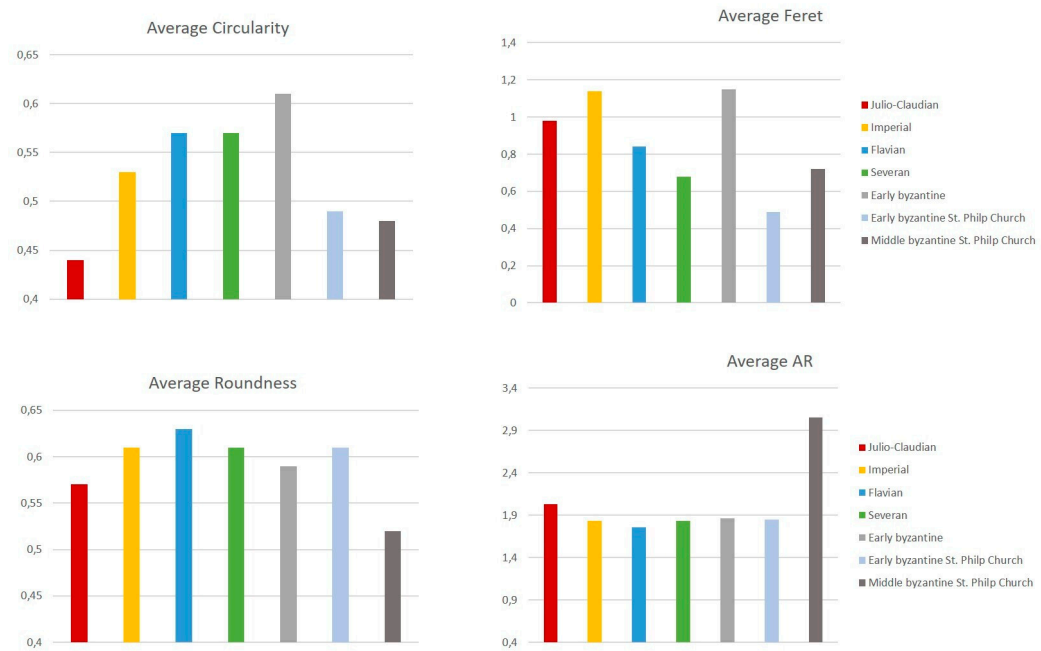


Figure S2. Average shape factors studied for the aggregate grains in bedding mortar samples over time.