

7.2. Phase 2. The Renaissance Stone Harbour, 1570s-1620s

7.2.1. Summary

Phase 2 is the shortest phase on the Gammel Strand Metro Cityring project and lasts approximately fifty years, from the 1570s to the 1620s. In Denmark it spans part of the early Renaissance and middle Renaissance periods (Early Post-medieval period internationally). This phase was dated using a mixture of finds analysis and historical records; dendrochronology was used to date some of the structures.

7.2.2. Introduction

During this phase of Gammel Strand, the harbour was transformed, which is accredited to the orders of Kristoffer Valkendorf, (Nielsen 1872, nr. 363, 542), although evidence from the excavation suggests he has been given more credit than the archaeological remains suggests. This phase featured the construction of a new Weighing house (*Vejerbod/hus*) and new stone harbour wall. The construction of the Weighing house is recorded to have been undertaken in 1581 (Nielsen 1872, nr. 363, 540-542). In 1583 a stone harbour wall (Nielsen 1872, nr. 363, 542) was also completed, (stated in the records as being a harbour that was surrounded by boulders) presumably started and completed before the new *Vejerhus* was finished in that area. Located directly south of the wall and also within the construction cut was a line of posts, up to 3 m high, that had been pushed into the harbour bed and acted as a bulwark. Also part of this phase, but not recorded in any documentation from the periods is the new harbour path located directly north of the wall. This harbour path was set upon levelling layers built presumably upon the earlier Late Medieval land reclamation layers. The deposits comprised archaeological remains that suggested they came from urban waste.

To the south of the stone harbour wall dredging within the harbour was recorded in 1579 and is represented by Renaissance period finds being pushed into the earlier Medieval layers (as mentioned in Chapter 7.1). There were also new layers created from dumping deposits into the harbour. These layers appear to build up over a period of time and were seemingly affected by fluvial activity within the harbour. This period ends with the construction of a new part of the harbour in the western part of the excavation trench, along with harbour improvements across the whole excavation area.

Phase 2 summarises the results from 20 groups and sub-groups and re-evaluates many more linked to the *Vejerhus* from the 2010 report. The *Vejerhus* will be included as the first discussion point in Phase 2 due to the historical date of completion in 1581. The dendrochronological dates from post group G602 suggest a felling date in the mid 1560s, therefore these posts predate the recorded construction date (1583) of the new harbour front, which further suggests that the creation of the new harbour front may have started earlier and continued over a period of 20 years before being completed in the early 1580s.



Fig. 58 Plan of Phase 2 structures and features (see also A3 version in Appendix B)

7.2.3. Gammel Strand watching brief 2010-11 – re-assessing the *Vejerhus* Group, G221

Group	Sub-groups	Group name
221	218, 219, 220	<i>Vejerhus</i> -walls, foundations. Phase 2
	289	Demolition sequence Phase 5
	346	<i>Vejerhus</i> -outhouse. Phase 2
	347	<i>Vejerhus</i> -bulwarks. Phase 2

Table 19 Groups and sub-groups related to the *Vejerhus*, excavated in 2010-11

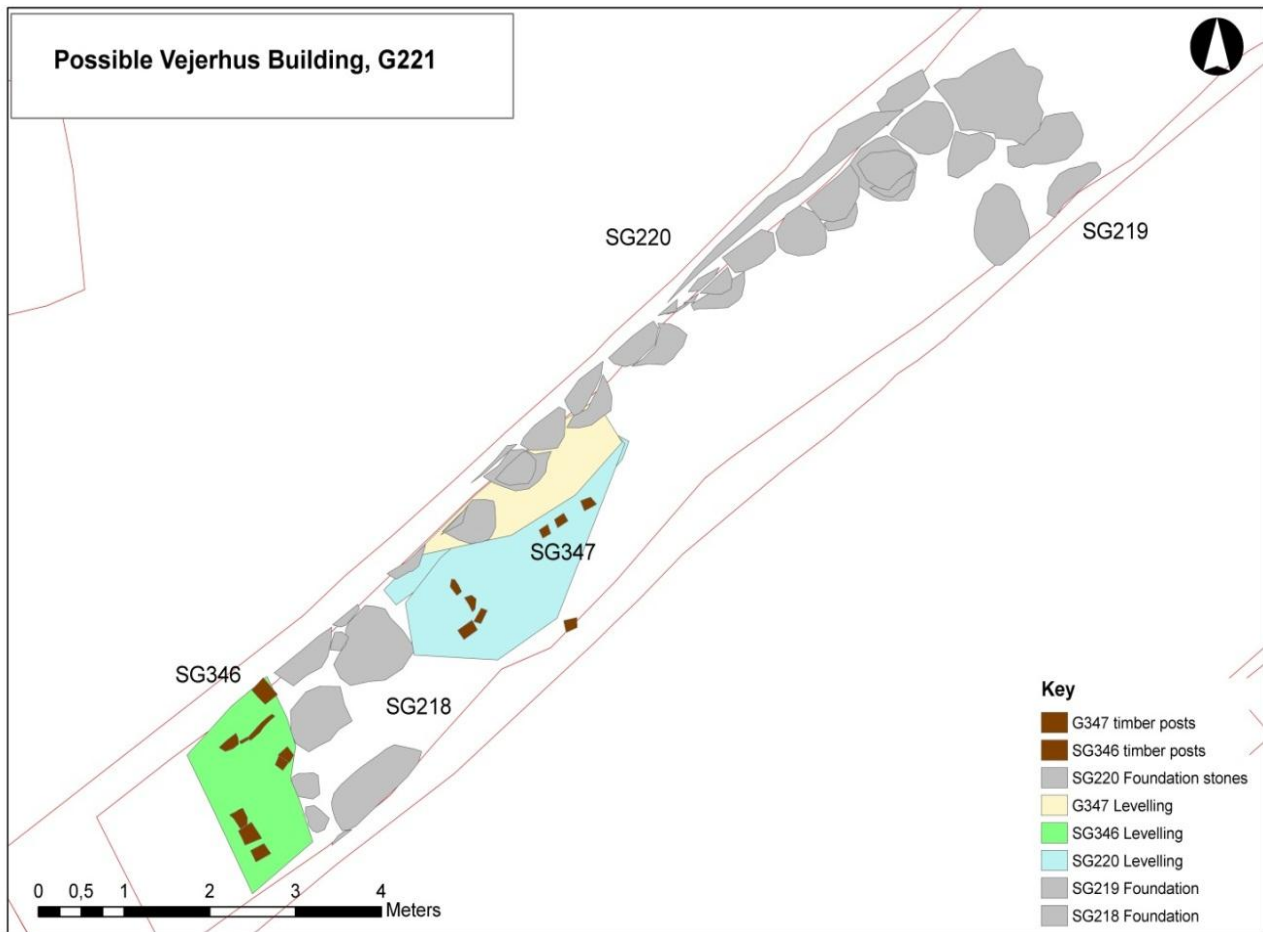


Fig. 59 Plan of possible Vejerhus building, G221. Watching brief phase, 2010

7.2.3.1. Introduction

The second *Vejerhus* was constructed in 1581, on the order of the king (Nielsen 1874, nr. 507, 413). It was “seen as a marvel due to its location so close to the beach” (Nielsen 1872, nr. 363, 540-542). The earlier *Vejerhus* had fallen into disrepair and the king had ordered the town council to rebuild it. The building, in all its forms was in use as a Weighing house until 1850, with its demolition in 1859. The 1840 Daguerre type photo as well as paintings and pictures reveal it was manufactured of brick with a timber framework.

To enable a better understanding for Phase 2, the main structures and features from the earlier 2010 excavations should be summarised, included in the Main Excavation report and added to the overall phasing. The 2010 watching brief revealed that the brick walls of the G221 structure was built on stone foundations with *munkesten* red brick the main form used for the brick walls. As written by Olesen and Bork-Pedersen (2012), the building group consisted of 7 sub-groups SG218 (western foundation wall), SG219 (eastern foundation wall), SG220 (northern foundation wall), SG289 (demolition sequences of the *Vejerhus*), SG346 (outhouse), SG347 (structural elements) and 28 contexts representing the remains of the large brick and stone built structure. These quite well preserved structural remains which were found in the western half of Gammel Strand but close to its centre, represent the northern foundation in its full length of 9.5 m, but not full width (only 1.1 m), the 2.15 m of the c. 2.2 m wide western foundation and 1.76 m of the also c.2.2 m wide eastern foundation. The whole building was approximately 13 metres wide by

possibly 18 m long (using measurements linked to the believed former harbour location in the *Vejerhus* area and archaeological remains).

The remains of a suggested lean-to/outhouse, SG346, located on the western side of the building and the possible remains of structural elements, which potentially could be room divisions, are supposedly related to the building (Olesen & Bork-Pedersen 2012).

Olesen & Bork-Pedersen (2012, 119-120) write that the *Vejerhus* was an extraordinarily solid building, consisting of three floors, over which there was an attic. The upper floors and the attic were used as storage floors, while the lower ones were used as *Accisebod*. Besides housing the *accise*-work, the lower floors also housed the town weight, used to calculate the amount of food goods shipped into Copenhagen through Gammel Strand. Weighing the freight was a job undertaken by the town weight master and his men whose job it was to ensure the correct *accise* (tax) was paid. The building was demolished in 1857.

Based on the excavation results and knowledge about the 19th and 20th Century activities in the area, it is likely that the building, even though truncated, may exist in some format beneath the asphalt road and square area at Gammel Strand as the preservation of the archaeology in this area is of high standard.



Fig. 60 Northern foundation wall SG220. Comprises lower course (SS4298), upper course (SS4350) and overlying brick structure (SS4453) C07_20100729_0318

7.2.3.2. Groups belonging to the 2010 *Vejerhus* archaeological foundations

The western, eastern and northern wall foundations comprised sub-groups SG218, SG219, SG220 respectively. The foundations consisted of large limestone blocks that were uncut and not faced or shaped and were laid in lines overlying dark humic deposits. These stones were probably glacial erratics that are found over all western *Sjælland* (Ruter 2016). The foundations were similar in construction style with the materials used in the foundations of harbour wall G532, and the Medieval walls and defences found at the

Rådhuspladsen and Kongens Nytorv excavations as well as at non-Metro Cityring excavations such as Christiansborg Slot.

7.2.3.2.1. *Western foundation wall SG218*

The western foundation wall SG218 comprised a line of stone boulders, SS4075 (SG320) measuring 1.92 m by 1.8 m wide, and orientated NNW-SSE. It contained only 4 large stones (at 0.89 m by 0.66 m by 0.3 m) and 3 smaller stones (0.3 m by 0.3 m by 0.2 m). No construction cut was observed. It had been heavily truncated by modern disturbance which removed the upper courses. The form of the foundation was identical to SS4298 from SG220 and SS4703 (SG219) and represented firm foundations of a many storeyed structure evidenced by the substantial width of the foundations.



Fig. 61 Western foundation wall SS4075, G218 of Valkendorf's *Vejerhus*.
Looking NE. C07_20100726_0296

7.2.3.2.2. Eastern foundation wall SG219

The eastern foundation wall, SG219, comprised a line



of stone boulders, registered as SS4703 and measured 1.5 m long by 1.7 m wide by 0.3 m thick. Stone foundation wall SS4703 was heavily truncated with only 4 large stones remaining (at 0.6 m by 0.5 m by 0.3 m), and was set on a NNW-SSE orientation. No construction cut was observed. The wall was heavily truncated by a modern gas pipe, presumably laid down in the 20th Century.

Fig. 62 Wall SS4017, SG219. On the left side of the photo is part of wall SS4298 of wall SG220. Looking NW. C07_20100730_0330

7.2.3.2.3. Northern foundation wall SG220

The extant northern wall comprised a series of foundations and wall parts orientated NE-SW. The lowest layer was stone boulder foundation SS4298, measuring 7.5 m long by 0.78 m wide (partially exposed), with each stone boulder measuring between 0.5 m by 1 m by 0.3 m. No construction cut was seen. Overlying the stone boulders SS4298 was SD4377, a deposit comprising mortar, sand and clay, perhaps representing the decomposition of mortar, and containing a single residual Late Medieval fragment of redware. This in turn, was overlain by SS4350, another foundation layer of 13 stone boulders which was the base for brick wall SS4453.

Wall SS4453 comprised seven courses of *munkesten* brick, and three courses of irregular sized brick. The wall was not fully exposed due to the location of the trench, but the exposed area measured 6.5 m long by 0.36 m wide and 0.8 m high. The brick sizes were divided into two groups, which were located in two different areas of the build (Olesen and Bork-Pedersen 2012, 119-121). The seven lowest courses of brick comprised *munkesten* brick. The lowest course was highly irregular in form, and was laid and mortared in a style simply to provide a flat base for the upper courses. The second course was laid as a running/stretcher style bond; while the third course featured in header bond. The third course also formed a 1 skin thick cornice; a decorative feature at the eastern end of the wall. The next four courses were irregular in form, but from closer analysis, both cup bond running/stretcher bonds were observed. The three upper courses comprised bricks which were described as a typical Renaissance size (Christian IV-type) brick with a light red or yellow firing, and dated to c.1600. The upper 3 courses contained both red and yellow bricks in the building, and comprised either part of a door frame or perhaps a window frame.



Fig. 63 Northern foundation wall SG220 looking northeast. C07_20100729_0321

The five uppermost courses (two *munkesten* and the three upper courses of red and yellow Renaissance brick) were truncated, while the underlying courses extend beyond the eastern edge of the excavation. It has been suggested that the wall terminus contains rabbeted bricks in order to form either an access way or doorway which related to a major entry point in the northern wall, as shown on the 1683 map.



Fig. 64 Northern foundation wall SG220. Indication of a window frame in the upper left corner of the photo. C07_20100729_0322

7.2.3.2.4. *Vejerhus bulwarks SG347*

Sub-group SG347, as seen in Fig. 59, consisted of two vertically set wooden post timber structures; bulwark ST4364 and bulwark ST4275. The first of these, ST4364, comprised four posts, with square cross-sections measuring 0.09-0.17 m. These were inserted into the ground in no specific order. Bulwark ST4275 comprised of posts also displaying a square cross section and measuring between 0.16-0.27 m. These were set in a line on a SE-NW orientation. No dating was able to be obtained from these posts.

The posts were found to be stratigraphically older in date than the foundations of the walls and may represent extra foundations for the structure as newly reclaimed/created land in the harbour region may not have been the most solid of ground to build on (Olesen & Bork-Pedersen 2012, 118-119). Levelling layer SD4385 relates to this phase of activity, helping to increase the ground level on top of the newly reclaimed land.

7.2.3.2.5. *Vejerhus outhouse SG346*

Directly west of western wall SG220 was sub-group SG346. This group comprised levelling layer SD4243 and bulwark ST4183. The bulwark comprised seven vertically set posts, in a vague square shape along with two vertical set planks and a horizontally laid board. This formed a NW-SE orientated structure measuring 0.7 m in length with posts measuring 0.85 m by 1 m. The field staff suggested that the structure may have leaned

onto the building where only the posts and the levelling layer remained. From re-accessing the material it appears that they represent more bulwarks associated with the *Vejerhus* area and the *Vejerhus* itself.

7.2.3.2.6. Demolition of *Vejerhus* SG289

The *Vejerhus* was demolished in 1857 and this sub-group represents the destruction process. A total of 5 different destruction and dump layers relate to this activity which was part of the major change in use and physical appearance of Gammel Strand. As this group of activity relates to Phase 5 it will not be further mentioned in this phase chapter.

7.2.3.3. Discussion

From reassessing the archaeological information from the 2010 excavation archives and literature, structure G221 and the surrounding sub-groups have been added to the overall phasing of the report.

The Late Medieval activity in this area was land reclamation and stabilization, Phase 1 activity which is seen via SG266 (see Chapter 7.1) located five metres west of this area. This activity would have occurred beneath the limit of excavation and was not seen in the trenches.

The next major activity was the creation of levelling layers and wooden piling. This is shown by the bulwark and post groups SG346 and SG347 which comprised a levelling layer and a mixture of vertically set posts, some combined with horizontal planks, which may have provided piling and extra foundations for structures on damp harbourside land. Only the tops of these structures were seen.

Following the posts, building G221 was constructed. The building comprised strong foundations which consisted of large granite boulders between 0.5-1 m wide and long. These were only exposed to a certain depth and more may have continued below. These foundations either rested within the base of a construction cut or were possibly built on top of vertical posts, although this was not physically seen. The granite foundations were overlain by courses of *munkesten* bricks, which were large in size and mortared to the granite boulders as part of the construction process. Various forms of coursing were then used to provide a strong base for the brick wall, with the lowest courses presumably covered over and not seen above ground level.

The uppermost courses of the brick wall that still survive comprised a mixture of *munkesten* courses and then courses of smaller red and yellow fired Renaissance bricks which would have been visible from street level. It is from these 5 courses that we may see evidence of a window frame and door entrance which are shown on the 1683 plan (see Chapter 3, Fig.6). The upper courses were first demolished in 1859 and then truncated by a gas pipe in the early 20th Century so only the lower layers of the northern part of structure are seen in Phase 2.

Structure G221 represents a building of considerable size and wealth. The lowest levels do not suggest any rich decorative form but the varied materials that had to be transported to the location from various areas of *Sjælland* suggest an expensive building. The substantial width of the walls represents a building that could be many storeys high and from the archaeological building material, photographic documentation, plans and historical documents, the remains uncovered in 2010 were most likely the former foundations of the *Vejerhus*.

It is not known exactly where the *Vejerhus* was located in regards to the harbour front in 1581. It may have extended out from the harbourside, resting on piles or was located behind the harbour wall. It is probable that it was built around the same time as the harbour wall G532 and posts G602, and presumed by the authors to have been built shortly after the wall was in place.

7.2.4. The Stone harbour wall and the bulwarks

7.2.4.1. Introduction

The harbour wall and bulwarks were built at the beginning of Phase 2 and represent the main construction activity in this chapter. The walls and the wooden posts suggest that a large sum of money was used for quarrying and in some cases shaping the stone. Money was also spent on tree felling and working the wood, transport of materials and construction.

7.2.4.2. Groups belonging with bulwarks

Group	Sub-groups	Group name
602		Bulwark
	415	Wooden bulwarks, Guide Wall excavation
503		Wooden bulwarks, Oil Container trench

Table 20 Groups belonging with Phase 2 bulwarks

Associated with the harbour wall were various wooden bulwarks, set either in-front or south of the wall G532. The post line was found to continue outside of the Main Excavation trench and the Stairway trench, and was represented by G415 in the Guide Wall excavation and G503 in the Oil Container trench.



Fig. 65 Plan of harbour wall G532, bulwarks G602, G503 and G415 and the harbour deposits, featuring the re-use of Phase 1 groups G647, G678 and Phase 2 alluvial group G642.

7.2.4.2.1. Bulwark group G602

The bulwarks from G602 comprised a mixture of in-situ posts registered as ST39575 and measured individually. The posts were on average between 2 m and 3 m long and located at an average height OD of -0.03 m (with the occasional post being much lower e.g. -0.65 m). They were generally square in profile, with a boxed heart and straightened sides, measuring 0.2 m by 0.2 m wide. They all were manufactured from oak and comprised one flat terminus and one pointed terminus. They were driven through the Late Medieval alluvial deposits from groups G647, G678 and SG667, depending on the area of the trench, and into the harbour sand to the depth of 0.3 m. They were driven in so strongly that a mechanical excavator was needed in order to remove them.

The bulwarks were placed in the ground before the harbour wall was constructed. This provided a partial barrier to the sea and perhaps assisted in the construction process of the harbour wall directly to the north of the bulwark, functioning as a possible cofferdam. The posts were mostly fashioned from oak trees that were felled in 1557/8. Only some of the posts were re-used. Of these re-used or earlier posts, post ST210778 was the earliest post, dating from after 1440, but the majority of the earlier ones were felled between the years 1520-40. These early post dates are similar with to many of the harbour posts from bulwark G656 from Phase 1 and were possibly re-used in the new Phase 2 harbourside. Of the 26 posts analysed, 22 were able to be dated, with a provenance suggesting they were imported from various places within southern Scandinavia.

The whole post line/bulwark was linear in shape, constructed on a southwest-north east orientation, which was slightly different in orientation to the later harbours on site. The bulwark was spread over the whole 86 m of the Main Excavation and Stairway trench, although there were sections where later truncation had removed some of the posts.



Fig. 66 Photo of harbour wall group G532 and bulwarks group 602. Located at the eastern end of the Main Excavation looking NE. C03_20140602_10517.

7.2.4.2.2. Bulwark group G415

The posts also continued west outside of the Main Excavation trench. Only one post group was noticed within the Guide Wall excavation, which was re-interpreted in the post excavation stage. Post group G415 comprised one single post registered as ST12257. It was uncovered to the depth of 0.12 m, where work had to cease at the limit of excavation. Through later activity, possibly in Phase 3, all the other posts were removed and perhaps re-used in the Phase 3 harbour extension. No postholes were found to confirm this process.

7.2.4.2.3. Bulwark group G503

Located 14 m west of G415 was the eastern end of the bulwark, G503. The bulwark was uncovered in the Oil Container trench excavated in October 2012. It was not realised until excavating the Main Excavation trench in 2014 that these were probably a continuation of bulwark Group G602. The line of nine vertically set wooden posts continued westwards for 2.61 m. They were encountered at average height of OD -0.08 m and were exposed to a depth of 0.3 m before reaching the limit of excavation at 2 m below modern surface. Due to the size of the machine in the watching brief they could not be pulled from the ground, but their orientation, position in relation to bulwark G602, and depth at which they were discovered suggests a continuation of the bulwark from the Main Excavation trench.

7.2.4.3. Discussion

The authors believe that the purpose of the bulwark was to protect the harbourfront from any ships or debris that might collide with the harbour wall. The bulwark is represented in paintings and copper engravings from Copenhagen in 1587 and 1611. The posts were the first structure built in the new

Renaissance harbour, with the wall occurring soon afterwards in 1583, as stated from historical documents and accredited to *Rentemester Valkendorf*.

If the posts were inserted into the ground soon after 1558 and the wall was not finished until 1583, there is a twenty five year difference between the two constructions. It would appear that there is a large time gap between the two unless the bulwarks protected the Late Medieval harbour or the stone harbour wall was constructed earlier. The posts were in use for 2 phases on site, Phase 2 and Phase 3, and in historical dates until the late 1600s. There was very little evidence for the replacement of these posts and it is presumed they were in place for c. 130 years.

7.2.4.4. The Renaissance stone quay wall

Group	Subgroups	Group name
532		Stone harbour wall
	496	Stairway trench and eastern foundations
	502	Harbour wall, Oil Container Trench
	411	Harbour foundation wall (Guide Wall)
	476	Culvert in wall. Same as 477.
	477	Culvert in wall. Same as 476.
	516	Culvert

Table 21 Groups and sub-groups related to the Renaissance stone quay wall



Fig. 67 Photo of central section of harbour wall G532 with bulwark G602 in front. Looking NW.C03_20140611_10788

7.2.4.4.1. Introduction

The stone harbour wall, G532, stretches for 88 m through the Guide Wall trench and Main Excavations, as shown in Fig.65. Historical records state that it was constructed by 1583 (Nielsen 1872, nr. 363, 542) and it was in use until the 1690s when the new wooden harbour was constructed. In the western area the stone harbour was in use until the 1630s when a new wooden reclamation box and then wooden harbour front was constructed. Here, at the western end of the Main Excavation trench, the upper reaches of the wall were demolished and a new harbour constructed southwards. This process will be discussed in Chapter 7.3.



Fig. 68 The central area of wall G532 and bulwark G602. Photo rendering in 3D. Museum of Copenhagen

The wall was uncovered approximately 1.5 m below the present ground surface in the Guide Wall excavation and between 1.5 m and 2 m below the modern surface in the Main Excavation at an average height OD: -0.24 m at the top of the wall. It survived at a width of 2 m to 2.6 m and from 1.5 m to 2.5 m in height. The destruction of the upper wall part leads to an estimation of the original height. It was built within a linear construction cut with steep sides and flat base truncating the remains of the Late Medieval harbour, structures and deposits.

The wall was first seen in the Guide Wall excavation in 2012 and in the Main Excavation and the Stairway trenches in 2014. It was built on a NE-SW orientation, although it curves slightly in the centre of the Main Excavation, which may reflect the former fluvial channel of the canal in the Renaissance period. The wall group was built directly on top of the Phase 1 Late Medieval bulwark group G616, and directly south of the Phase 1 bulwarks G467, G478 and G485. It was also built into the Phase 1 groups G647, G678, SG667 and the Phase 2 group G642 in the west.

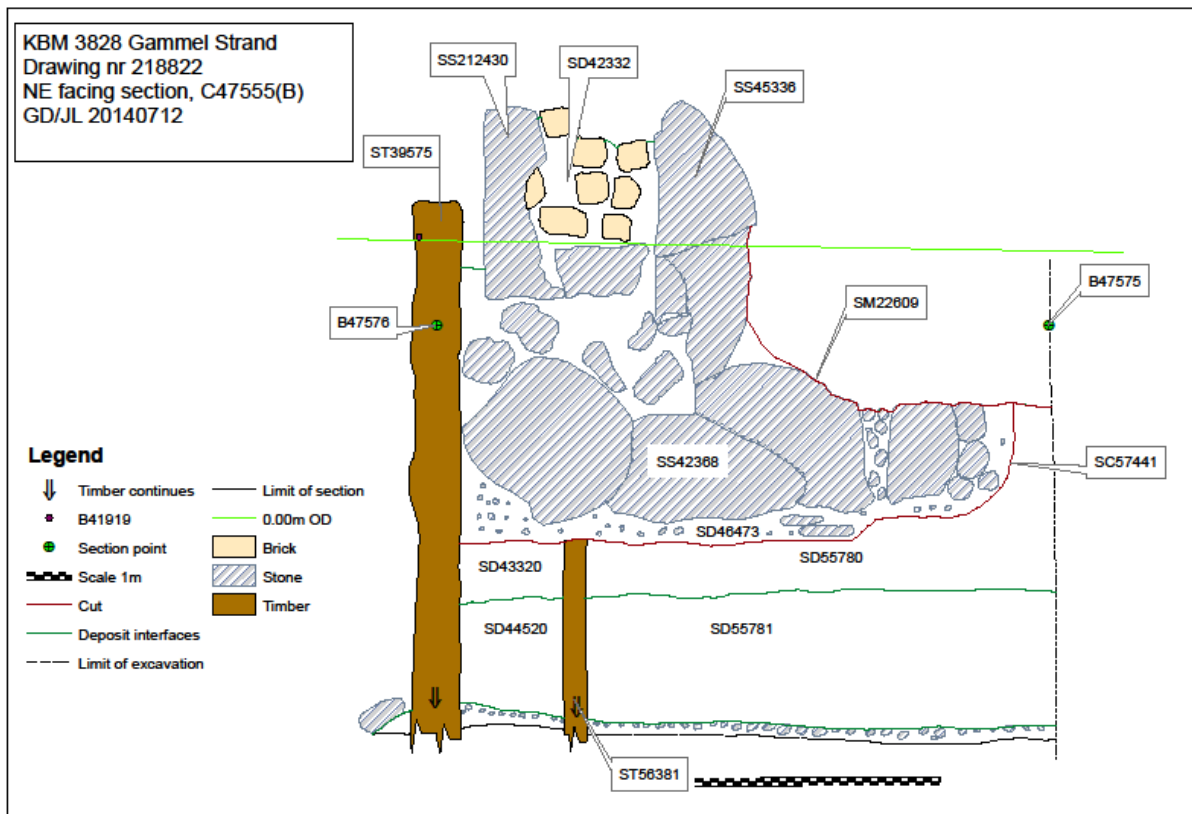


Fig. 69 Section drawing 218822 which shows the construction style of wall G532, at the western end of the excavation.

The Renaissance wall phase began when posts from the bulwark group G602 were hammered into the ground and a construction cut for the wall, SC57441, was excavated to the north of these posts. The construction cut was rectangular in shape with a flat base and steep sides. It was visible for 12.93 m at a width of 2.23 m, along the 88 m exposed length of the wall. The top part of the cut was not always visible as the area was greatly affected by the early 1900s gas pipe trench. As well as truncating former posts from Group G656 and other various Late Medieval alluvial deposits from Phase 1 it also truncated deposit SD55778 from Group G667.



Fig. 70 Photo showing the west facing section of wall G532. Note that the rear of the wall has been truncated, as had the top of the wall by later activity. The Late Medieval harbour bulwark G656 has been cut or snapped with the upper part of the post horizontally placed on a north-south orientation C03_20140630_11307.

7.2.4.4.2. The wall G532

Overall construction technique

The first construction activity for the wall was the creation of a bedding layer. This comprised a mixture of broken brick and small stones along with gravel and soil deposited to create a flat base. This activity was represented by deposits SD46473 in the western part of the main trench and SD56355 in the central and eastern part of the trench and was located along the base of the cut. The main harbour wall foundations were built on top of this bedding layer. Foundation stones SS42368 were added along with smaller stones and fragments of CBM. The stones were large sub-rounded blocks of granite between 0.7 m and 1 m in diameter and up to 0.9 m high. They were unworked, perhaps glacial erratics from *Sjælland* forming a foundation, which is a building technique commonly seen in Copenhagen from the Medieval period. Various Medieval examples include the Medieval walls and gates at Kongens Nytorv and Rådhuspladsen, the castle on Slotsholmen, and the *Vejerhus* on Gammel Strand. They were laid either one or two courses thick with smaller stones and CBM placed in between to form a strong wall.

The next phase of construction was the addition of an extra layer of stone wall, SS40775. This part of the wall would have been visible above ground after construction and faced out across the harbour unlike SS42368 which was hidden from view below ground. Structure SS40775 comprised a line of rectangular shaped facing stones, dressed on three sides and located along the southern side of the wall. Forming the northern side or rear of the wall were some large stones, SS45336. In between these two parts there was a



rubble or brick core, SS42332, all of this was held together by a lime rich mortar. This section or part of the wall contained some differential construction techniques which are described in the next few paragraphs relating to the various sections.

Even though the preservation of the wall differed, it was clear that there were various styles of construction along its breadth. This is shown in the photo Fig. 72.

Fig. 71 Photo of wall fragment SS12924 of subgroup 412, group G532. C03_20120726_5223 Fig O

Western section

The upper western section of the wall was heavily robbed out and only a single stone, SS212430 (same as SS40775) survived to represent the front or facing part, this can be seen in the section Fig.70. This robbing may have even occurred at the end of Phase 2 when this area was extended southwards and the wall covered over.

Set at the rear of the wall was a truncated area of stonework which was recorded as SS45336 in the Main Excavation trench and G411 in the Guide Wall excavation. The stones from SS45336 were generally larger than the facing stones in the main trench and measured 1.12 m long by 0.45 m wide by 0.45 m thick. Wall group G411 comprised a single wall, SS13160, which was orientated SW-NE and located at the average height of 0.23 m OD. It was not fully uncovered and led into the eastern and western sections of the excavation trench. The discontinuous wall was comprised of large blocks on average 0.65 m by 0.95 m in size, and sometimes exposed up to 0.4 m.

Together the two northern and southern elements form the stone faces of the wall into which a rubble and mortar deposit, SD 42332 has been dumped- essentially a double faced/rubble filled wall. This deposit was less truncated in Trench 1 of the Guide Wall trench and instead was seen as wall SS12914, G412. It consisted of a badly preserved two-course high *munkesten* brick wall above set within a red and yellow mortar.

Central section

This section followed the same overall construction technique with some south facing stones, and a few rear section stones as part of G412, seen in the Guide Wall trenches 2A and 2B. There was also an area measuring 5 m long that comprised a brick wall, SS41300, which did not contain any facing or rear stones. Overlying SS42368 was a brick built section of the Valkendorf water-front wall, recorded as SS41300. This wall consisted of some areas containing loose brick wall set with mortar with yellow brick. As the majority of the wall comprised red brick, this difference was very obvious. This suggests some rebuilding evidence. The yellow brick was probably a result of differential firing.



Fig. 72 Photo of eastern end of wall G532 after bulwark G602 was removed Photo shows the different construction methodology to areas in the centre and west. C03_20140613_10888

Eastern section

At the eastern end of the trench, two different construction techniques were found. The central eastern area featured a dark hard mortar, SD43364 overlying the foundation stones SD42368, measuring 7.2 m long and 0.5 m wide. Set within the mortar was brick structure SS56008, comprising a mixture of placed or set bricks. They were joined together by a mixture of grey blue mortar with straw and a yellow, clay rich mortar. Within this deposit and structure were two redware sherds and a fragment of a German stoneware jug which post-date the 1550s. The bricks were overlain by a line of faced stones, SS40775. The stones were sub rectangular in shape with a cropped or faced side and a rough back measuring approximately 0.67 m by 0.43 m by 0.7 m thick. This part of the wall continued for 19 m.

Adjacent to this area and at the far eastern end of the trench was a slightly different construction technique. Overlying the large foundation stones, SS42368 was a large bedding deposit, SS42208. The deposit comprised broken bricks and stones mixed with mortar and spread over an area 23 m long. It was overlain by a roughly laid brick and stone surface/foundation, held together by an excessive amount of yellow mortar. This served also as a base for the front facing stones SS40775.

As these walls lasted in position for c. 120 years, it is not known whether the different construction styles next to each other represent rebuilding phases or simultaneous differential construction due to cost, different materials or different builders.

Stairway section

The wall continued into the Stairway trench in the same style from the Main Excavation trench. The eastern section of Guide Wall trench Area 3 was affected by the construction of the station box in 2013 and the exposed wall was seen as very truncated, appearing discontinuous in plan. The sub-group SG496 represents this section of the wall. The wall group in this area was a mixture of grey stone boulders of a former wall with remains of a badly preserved *munkesten* brick wall above set within a reddish yellow mortar. The wall is linear and orientated SW-NE. It also comprised truncated mortar deposits SD15452 and SD15759 uncovered by removal of the upper reaches of the wall in that area. In the Stairway trench the wall could not be fully excavated for health and safety reasons. The excavation relied on surveying, context and photo recording.

Harbour wall – Oil Container trench

The far western part of the wall was uncovered at the height OD 0.35 m in the Oil container trench in 2012. Wall group G502 measured 1.76 m long by 0.78 m wide and comprised what is believed to be the upper part of the harbour wall in that area. Although it was located 0.5 m higher than the wall found in the Main Excavation area it may represent differential robbing of the harbourside wall as well as representing the re-use of stones in foundations of a Phase 4 building.

Renaissance pottery, late Medieval residual pottery, animal bones and clay pipes were found with the walls. These finds represent a mixture of deposition; some finds were obviously deposited when the structure was being constructed, some while it was in use and perhaps some when it was being partially demolished.

The differential style of wall construction may represent two things; repair of areas that were damaged with different techniques, or a diverse use of materials used to construct the wall along its length.

7.2.4.4.3. Culverts related to the wall

Culverts G476 and G477 of wall G532

Built into the eastern end of G532 was a Renaissance culvert.–The culvert and sea wall SG476 and SG477 together measured 3.11 m by 1.91 m by 0.26 m thick. The culvert SG476 was located at an average height of OD: 0.3 m to the north in the Guide Wall excavation and 0.15 m to the south in the Main Excavation. Culvert sub-group 477 was located at an average height OD of 0.5 m in the Main Excavation. The groups comprised stone and brick structures, culvert, mortar rich deposits and backfills with a former wooden pipe ST16964.



Fig. 73 Photo documentation of the culvert SG477 southern face. Looking north. C03_20140613_10891

The culvert consisted of two rectangular channels formed by leaving gaps between large facing stones with the centre stone placed on its side (see Fig.73 and Fig.74 for more detail). The culvert may have been constructed by the movement of the stone block, and reusing the red and cream mortar at the bottom of the stone as the new base. Laid within was the new wooden culvert, ST16935, which led through the harbour wall group G532. The culvert was seen in phases of the excavation (2012 and 2014) and re-recorded in the post excavation phase when it was seen that the two individual culverts were one large culvert.

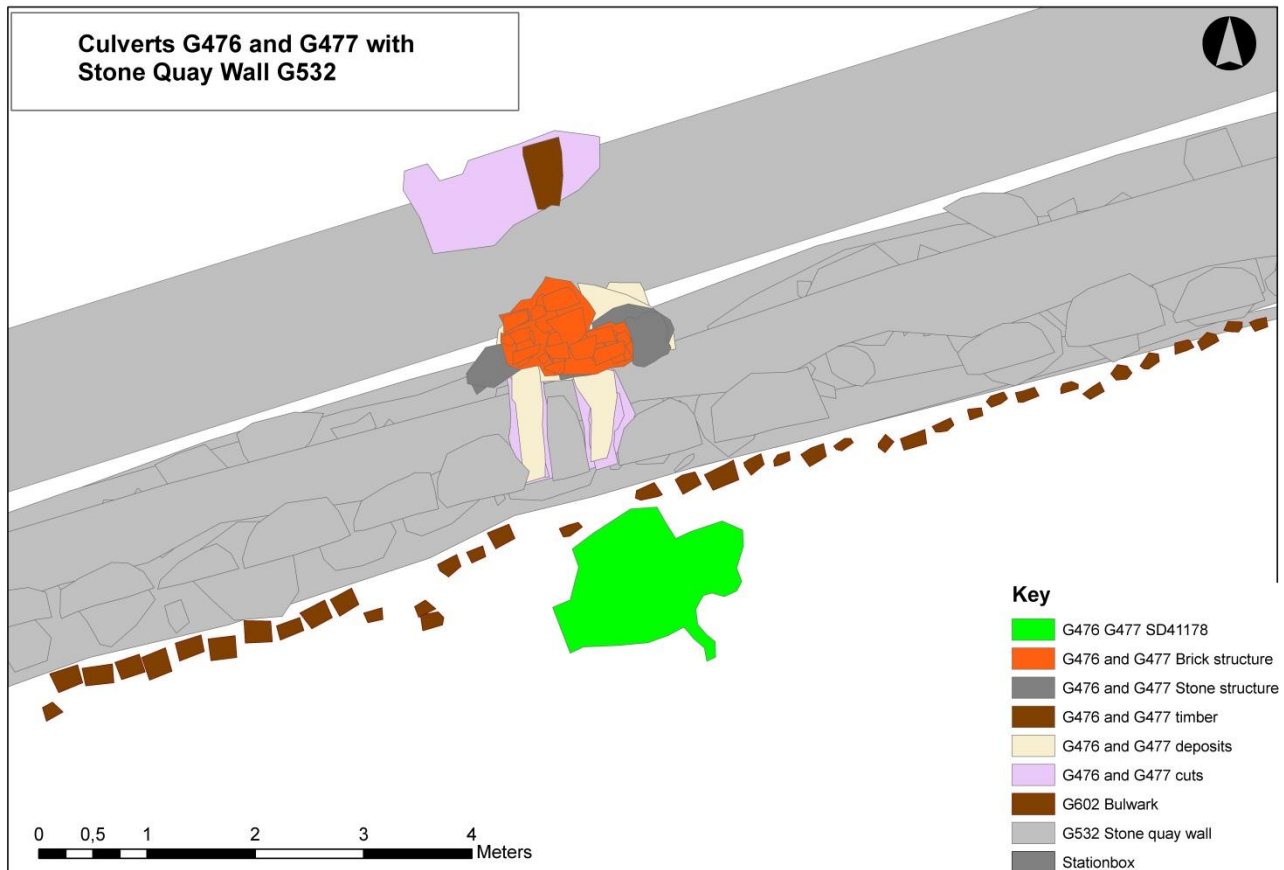


Fig. 74 Plan of culverts G476 and G477 set within wall G532.

Residue deposits were found within the culvert, but they did not all contain botanical evidence. Sample PM214832 from SD42048 in G476 comprised very few botanical remains, and represented the lower silting up of the drainage channel. Deposit SD41178 from G477 was interpreted as being formed from material that was washed through the culverts, as it was found directly to the south of the wall, below the mouth of the culverts and overlying the Medieval usage layers. The sample PM214879, which was taken from this deposit was analysed and the remains of a large number of cultivated plant remains and weeds were found, reflecting waste and rubbish flushed through the culverts, supporting the original interpretation. The remains of imported delicacies were found with the discovery of fig seeds (*Ficus carica*) suggesting a high status diet as the fruit had to be imported from the Mediterranean. Although the culvert went out of use in the late 17th Century, later deposits collapsed into the culvert when it went out of use. The residues of the culvert comprised ceramics, ceramic building material, and animal bone and clay pipes.

Sample PM214832 from SD42048 from G476 comprised very few botanical remains, and represented the lower silting up of the drainage channel. The ceramics from G476 comprised only 3 sherds. All 3 sherds are of German stoneware dating to the late Post-medieval period, possibly all 17th Century. All the sherds belong to jugs and two of these have been imported from Westerwald while the other is of possible Raeren origin. In comparison G477 comprised a total of seventy six sherds, dating from the Post-medieval period were found in the activity layer SD41178 within the main trench and also the fill deposit SD42047 found within the culvert. The activity layer comprised seventy Post-medieval sherds and the fill deposit six sherds. A single Medieval sherd was also found in SD41178 (see Kristensen 2016a). Most of the sherds belong to the

late 1600s representing later Phase 3 usage of the Phase 2 structure, which was expected as the culvert is in use for Phases 2 and 3

Kristensen writes that a total of 60.53% of the Post-medieval sherds found in Group 477 were imported from the Netherlands, most of it undecorated sherds from pots but there were also sherds from an oil lamp of possible Dutch origin found (FO216632). One white ware sherd and one Majolica dish sherd also belong to the Dutch ceramic assemblage. The *Jydepotte* are well represented in the group with 21.5% whereas only two stoneware mug/jug sherds from Westerwald are ascribed to the German area. 15.79% of the Post-medieval ceramic is unsourced (2016b, 21). As expected, clay pipe and glass were also in the deposits, but their numbers were low.

Culvert G516

Located 1.5 m east of culverts G476 and G477 and at 0.32 m OD were the fragmentary remains of possible culvert G516. The culvert was located in the 2012 excavations, but was not seen in the 2014 excavation. The possible culvert was located on the northern side harbour wall G532, comprising two sets of mortared yellow bricks with a linear gap in-between suggesting a function as a culvert by typology. The culvert never reached the wall, and was truncated just before, approximately 0.2 m north of the wall. It was orientated NW-SE leading into the southeastern section face of the Guide Wall trench, and measured 0.35 m by 0.13 m by 0.2 m. The fragmentary remains suggest a possible culvert, although it is peculiar why it was not seen in the 2014 excavations. This perhaps suggests that it had been truncated in antiquity, changed in form whilst the wall was in use or perhaps misinterpreted in the use of the feature. The culvert may even have been replaced by the nearby culverts G476 and G477, which seems the most probable reason. The culvert was located 2 m below the surface, so could not be excavated in the Guide Wall excavation.

7.2.4.4.4. Discussion

The stone harbour wall was constructed at some point between the late 1560s and early 1580s. The dates come from the bulwark, G602 where the wood for most of the posts came from trees that were felled in the mid 1560s and from the historical records which state the wall was completed in 1583. The wall replaced a decomposing wooden harbour front which had been in use from at least the 1530s. The new wall was constructed over and in front of this harbour front, G656, providing the expanded harbour area with a new, stronger replacement.

The materials comprised granite boulders which are present as glacial erratics from all over *Sjælland*. The faced stone was imported from Stevns Klint and shaped to provide a faced “front” for the wall. This was supplemented from mortar produced nearby, and *munkesten* bricks which were created from clay, either from *Sjælland* or *Skåne*. Due to transport costs, it is expected that they were fired nearby.

The wall was in use for both Phases 2 and 3. Due to repairs, truncations and removal of stones for use elsewhere, it is difficult to tell if the wall was originally built in one particular way or whether it was constructed in many different styles. As the wall was in use for c.110 years, it is only to be expected that it was repaired, which may suggest the differences in style. The wall acted as both a status symbol and a functional harbour wall. Out of all the phases on Gammel Strand this is the only definite stone harbour wall, the possible early 1400s stone harbour wall, SG256 from Phase 1, may represent a path or a wall.-This wall would also appear to have been the most expensive one to construct due to the materials that were used.

The culverts in Phase 2 were initially allowed to be built into the harbour wall but by the end of Phase 3 they had become a problem. It is recorded in *Forordning om Gadernes renovation og Brolægning* (Nielsen 1884, nr. 1115, 734) that, “It is also made illegal to have pipes running from the houses into the canals and existing ones should be blocked within three months”, this led to the end of the use of the culverts until Phase 4 when many new culverts from properties on Gammel Strand were established.

7.2.5. Alluvial layers and harbour usage

Group	Sub-groups	Group name
642		Alluvial and harbour usage group

Table 22 Group G642 alluvial and harbour usage

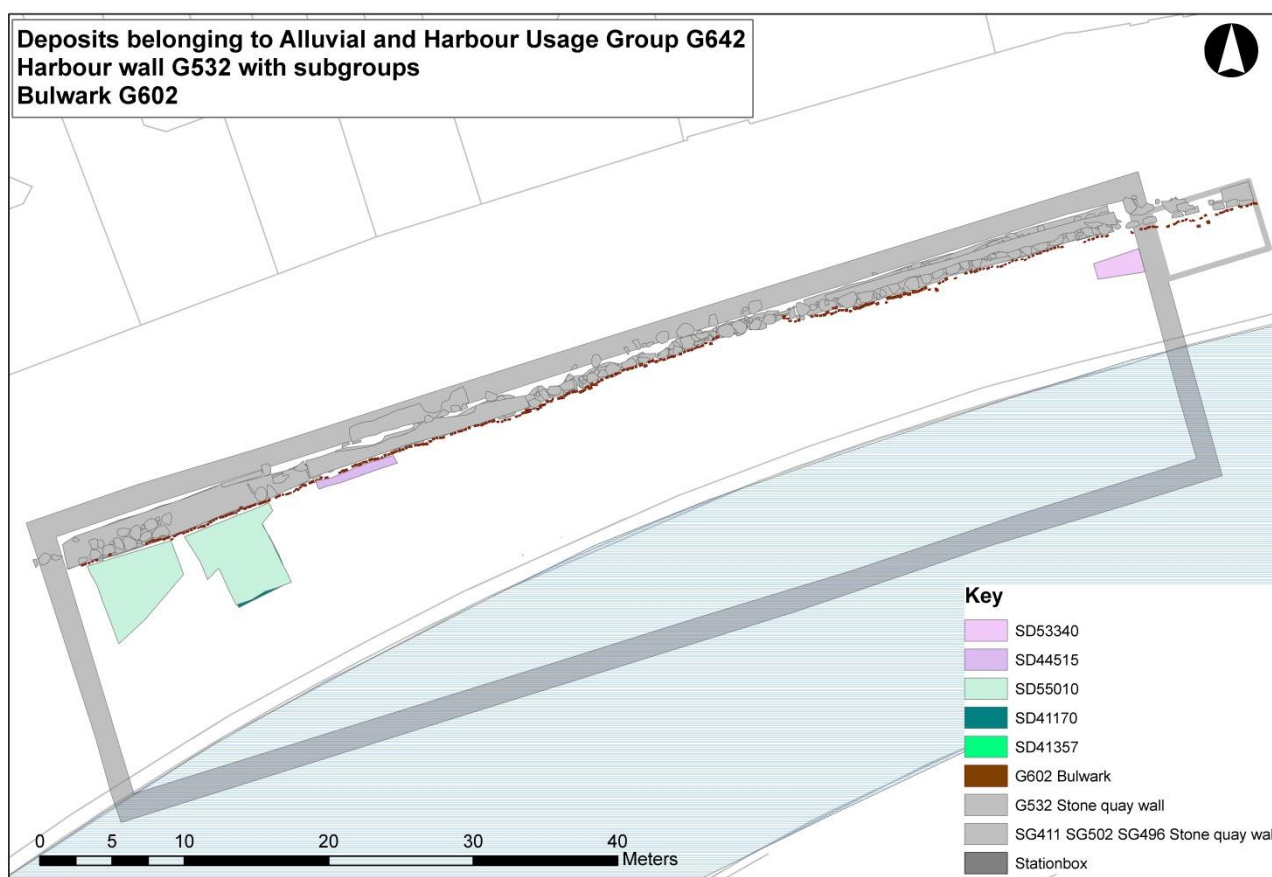


Fig. 75 Plan of whole area of G642, Main Excavation trench

7.2.5.1. Introduction

The first major action of Phase 2 after the construction of the new harbour wall, G532, and posts, G602, was the creation of new alluvial deposits. These were a series of deposits that were a mixture of alluvial and activity/usage that overlaid the Late Medieval alluvial deposits and the Phase 2 harbour front. These deposits begin in Phase 2 with some continuing to be deposited until the end of Phase 3. The group comprised five deposits which were all similar in make-up, a light to mid grey sand and silt. The layers that were affected by later dumping were turned dark brown or black, as seen in SD4134. They occur directly after the deposits from SG667 from Phase 1 and are located at an average height OD: -1.65 m. Most of the deposits were formed either just before or just after the harbour wall, G532, was built.

The deposits were focused in either the far western or the far eastern area of the main trench. The covered an area measuring 75.7 m long by 5.8 m wide, although the deposits were spread discontinuously. The areas where these deposits were not found contained Phase 1 alluvial deposits which continued in use, by dredging and the pushing in of waste, into Phase 2.

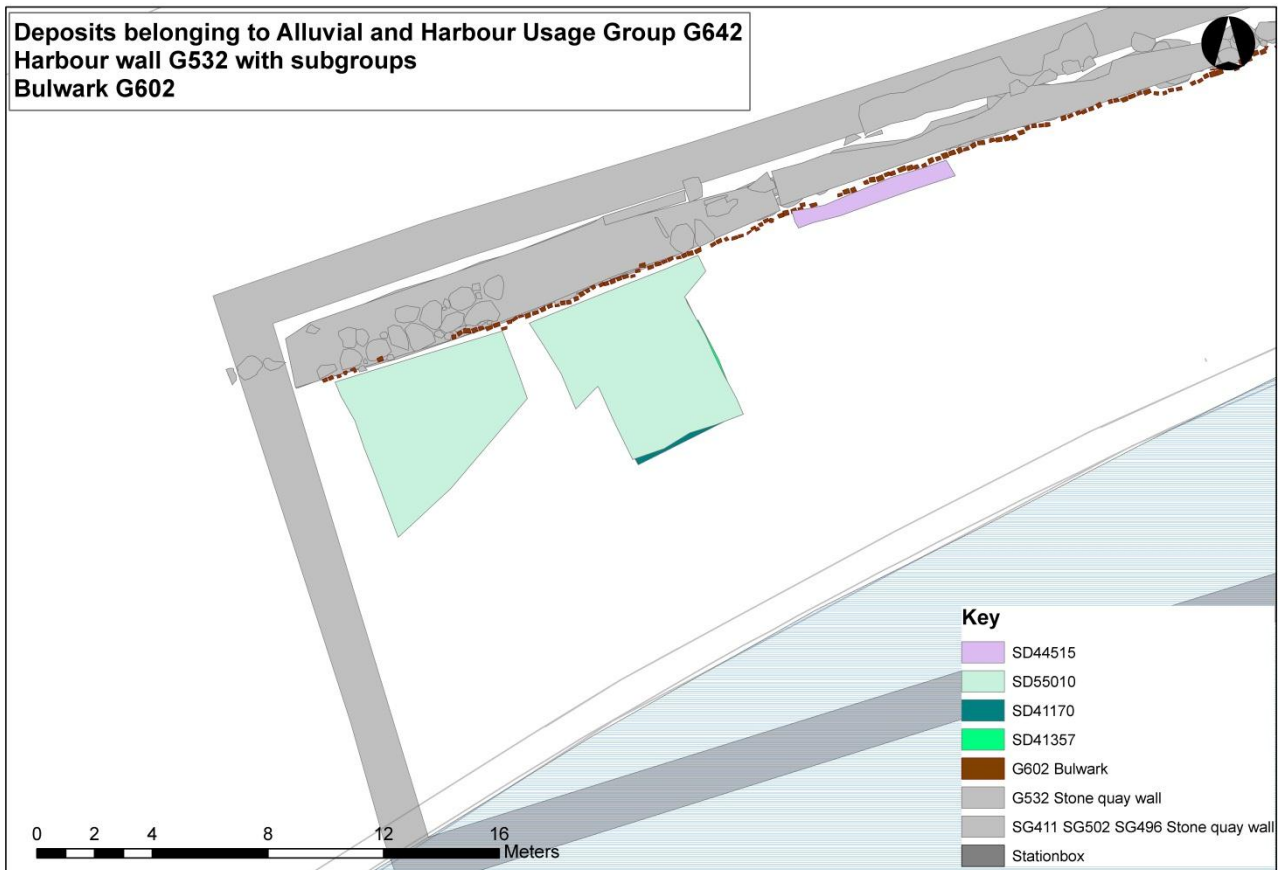


Fig. 76 Western end of trench G642. Individual deposits listed in key

The group deposits were up to 0.5 m thick, representing a mixture of dumping action and slow accumulation. In the far western area they were sealed in the 1620s firstly by the construction of a harbour reclamation fence and then a harbour wall with their corresponding backfilling deposits. The deposits, SD41357, SD41170 and SD55010, which continued southwards, and are not sealed by the 1630s Phase 3 harbour front, were affected by dredging and recent excavation by machine which is why they contained clay pipes and finds that were late 17th Century in date.

7.2.5.2. Group G642, alluvial and harbour usage

In the far western area, the earliest deposit encountered was SD41357, a small organic dump overlaying deposit SD55596 of G647. It comprised a mixture of urban waste consisting of leather, ceramics, glass, nails and plant remains. Sample PM212502 from this layer showed a brackish marine deposit which existed at the base of the harbour. This was overlain by SD41170, a broader deposit in the vicinity measuring at least 4.3 m by 3.5 m. The deposit appeared to have formed slowly, and contained clay pipes, tableware and storage glass along with imported and local red wares and *Jydepotte*. Sample PM212911 added further

information to this deposit, revealing it comprised weeds suggesting brackish waters along with urban rubbish consisting of hemp and grape seeds.

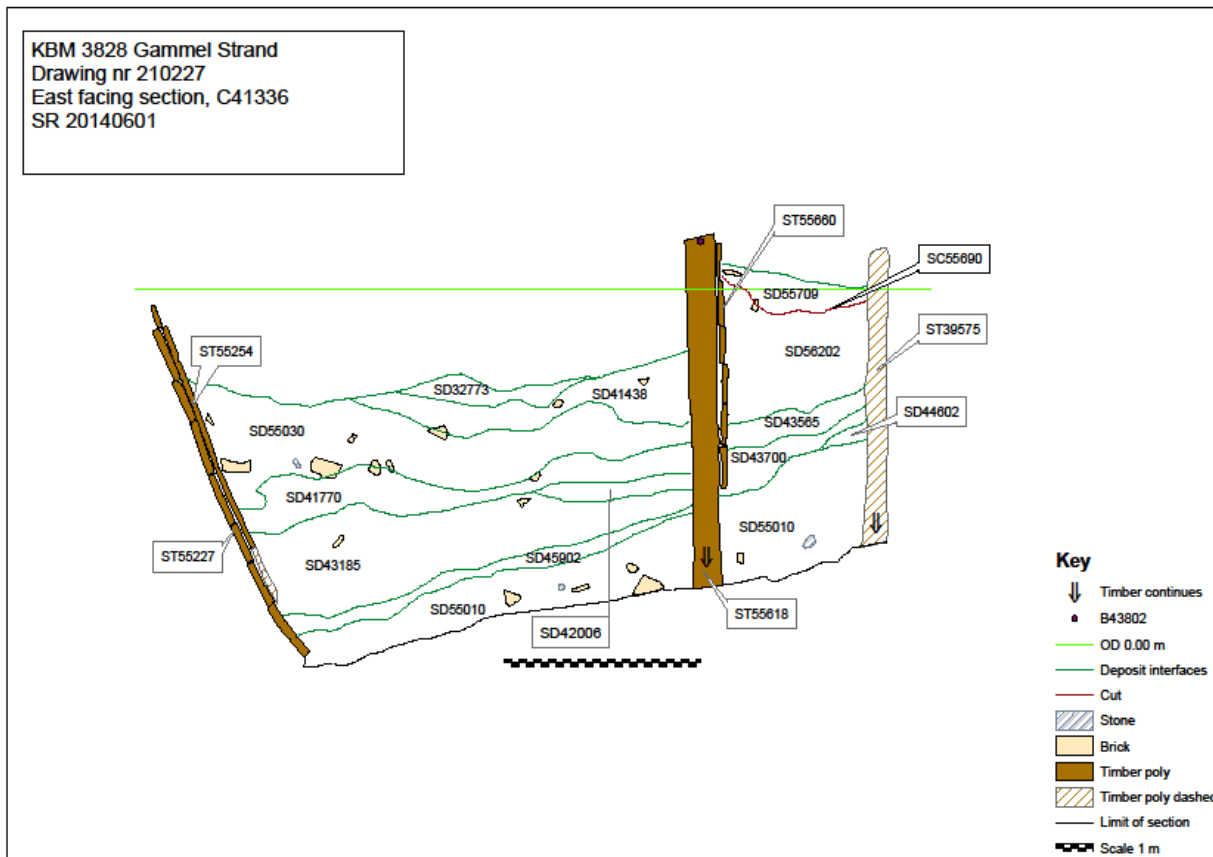


Fig. 77 Drawing 210227, East facing section showing Phase 3 stratigraphy at the western end of the Main Excavation. Note the presence of SD55010 at the bottom of the section, is not shown overlying late Medieval deposits here, overlain by later stratigraphy and having posts pushed through from later phases.

The deposit was overlain by SD55010 (see Fig. 76 and Fig.77), a mixed deposit which appeared to have been formed from natural accumulation with sporadic dump deposits seen as lenses. The deposit was thickest at its northern end, becoming thinner towards the south. Due to this formation evidence, it is seen that the sporadic dumps were thrown over from the landward side. The deposit can be split into two periods. By the 1630s the northern part was covered over when the bulwark, G648, was built. The southern part continued in use until the late 1700s and was affected by harbour dredging. The southern part of the deposit also contained a fantastic Chinese porcelain import dating to the later 17th Century. The porcelain, FO217082, was imported from Kangxi and was dated to the early 1680s, (which relates to Phase 3). Sample PM213658 from this deposit revealed the remains of cultivated plants from the city, and a few remains of plants and weeds from a meadow environment. Within this sample were *Cannabis sativum* (hemp), *Coriandrum sativum* (coriander), hazelnuts, buck wheat, fig, barley, hops (burnt) and cherry. Most of the evidence relates to the city although the figs represent imported goods for people of higher status.

East of the baulk and at the western edge of the centre was SD44515. This deposit was only seen in profile. It was viewed as a relatively narrow deposit formed against the bulwark posts, SD39575 from G602. The deposit has very diffuse boundaries with the underlying and overlying deposits. It was lensed with light grey

sand and has been interpreted as an alluvial deposit. It represented the usage phase of Phase 2 in the area. It consisted of material washed in from the harbour edge combined with some dumped material. The relatively narrow nature of the deposit suggests heavy erosion or frequent 'clean outs' of the harbour. No finds were retrieved from this deposit.

At the eastern end of the Main Excavation deposit SD55340 was revealed (see Fig. 75). The mid grey silt and sand deposit was suggested to have been a naturally accumulated silting layer formed after the Renaissance wall, G532, was constructed. It comprised occasional dumped inclusions such as CBM along with large quantities of animal bone which was predominately made up of jaw bones.

7.2.5.3. Discussion

This western area develops differently to the central and eastern areas of the Main Excavation. It is only in the western area that a large quantity of new deposits are created, represented by G642, which are then sealed by Phase 3 activity. In the central and eastern areas the Phase 1 deposits continue in use until at least the mid 1600s in Phase 3, c.1650s. The absence of new deposits created in the central and eastern areas is probably due to truncation via dredging in Phases 2 and 3. Dredging may have prevented these deposits from forming or the process of dredging may have mixed the Phase 1 and 2 harbour deposits together. This topic will be discussed more thoroughly in Phase 3.



Fig. 78 Pewter plate FO 212784, SD55010, G642, pre conservation. Museum of Copenhagen

Generally, the finds assemblage from the group was Renaissance in date composed of common ceramic types. There were one hundred and thirty one ceramic sherds dating to the Post-medieval period from the deposits SD41170 and SD55010. The Post-medieval ceramic comprised a large quantity of *Jydepotte* which made up 34% of the assemblage. Imports of stoneware and earthenware from Germany (for example *Westerwald*, Rhineland stoneware and *Niedersachsen* earthenware) are present. Tin glazed and regular earthenware from the Netherlands – such as Dutch faience, Majolica and whiteware are also present.

Several of the sherds have soot on the exterior as a result of cooking. The assemblage comprised sherds from various types of cooking wares, dishes, jug and mugs.

The glass assemblage comprised window glass, *Röemer* glass and *pasglas* as well as common types such as bottles. A large number of animal bones, a high percentages of which were cow mandibles were also recovered. Of note was a tin plate, FO212784, which is part of the new splendid household assemblage that was becoming more important on the social scene. The non sealed deposits by the Phase 3 bulwarks

comprised late 1600s finds. Sixty seven fragments from clay pipes were also found with the deposits indicating the new fashion for tobacco smoking; however, the small quantity reflects the relatively low use of tobacco in the early period. It is believed that all the finds would have been dumped from the early 1600s by people using the harbourside or from the surrounding area.

7.2.6. The road and levelling deposits

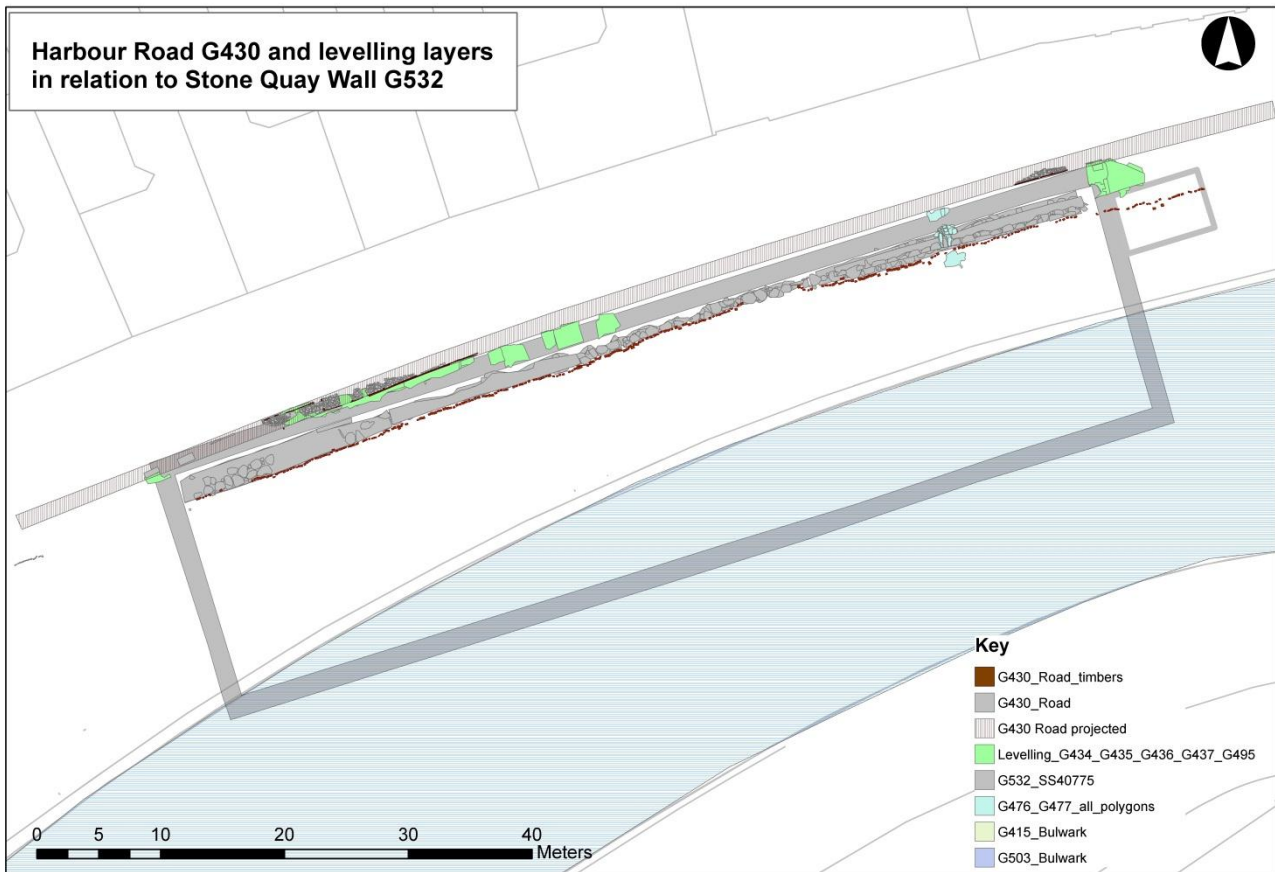


Fig. 79 Plan showing, wall G532 and behind the wall, levelling groups and the road G430

7.2.6.1. Introduction

The land reclamation groups were located to the north of the harbour wall group, G532, and were uncovered and excavated as part of the Guide Wall excavation. They were a mixture of groups of backfills behind the wall for the new reclaimed land. Shortly after the first reclamation layers were added, more layers were deposited to increase the height of the ground surface and provide a flat base for the road, G430 and any other structures north of the wall.

7.2.6.2. Land reclamation groups north of wall G532

Group	Sub-groups	Group name
434		Land reclamation group
435		Land reclamation group
436		Land tie group
437		Land reclamation group
495		Land reclamation group
521		Land reclamation group

702		Land reclamation group
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Table 23 Groups related to land reclamation north of wall G532

The groups that represented this land reclamation function were numbers G434, G435, G437 and G438. It was hard to differentiate which groups were evidence of land reclamation or levelling and it was decided to label them as land reclamation with the knowledge that the upper layers were probably more linked to levelling. The various deposits comprised former household waste as suggested from the various types of finds which represent the spectrum of the society. Examples include numerous redwares and greywares, the staple household wares within Copenhagen, and more elite stove tiles made from local clay but decorated with designs from Germany. The locations of these new land reclamation and levelling deposits are found behind the harbour wall G532, located geographically north of the excavations, and mainly in the Guide Wall areas. They were located on average between 0.25 m and 0.5 m OD.

Unfortunately the 2 m excavation limit prevented the discovery of the earliest Phase 2 layers in the Guide Wall trench. This was only seen in the Main Excavation trench, and due to the harbour base location, affected by dredging activity.

7.2.6.3. Groups belonging to land reclamation

The group descriptions are listed in stratigraphic order, rather than numerical order.

Land reclamation G437

At the western end of the Guide Wall trench in Areas 1 and 2 was a series of groups of deposits that were formed by the act of dumping but reused as a base of a road for the harbour. The earliest group encountered in the area was G437. The group comprised two rich sand deposits which have been truncated by later posts and modern trenches for pipes. The deposits SD13141 and SD13186 follow the orientation of stone harbour SG496 on a NE-SW orientation with the harbour wall being the southern boundary. The deposits were located at the limit of excavation, so the true depth was not known. They measured 16.44 m by 1.4 m by 0.26 m. The groups contained one single find, a Late Medieval sherd of greyware, FO203869. The very small quantity of finds and nature of the deposit suggests it may have been redeposited beach sand.

Land reclamation G435

Overlying G437 was a succession of 7 waterlogged deposits, forming G435. The deposits were seen at 1.5 m below the surface and were revealed to be c. 0.5 m thick in some areas. The deposits varied in consistency between clay and sand, and silt and sand depending on whether they had physical contact with the overlying sand rich deposits of G434. Some deposits were very organic whilst others appear as re-deposited natural clay.

The group underlies the road bedding group G434. The group finds assemblage consisted of a fairly large quantity of urban waste, which was only expected with the group measuring 40.3 m by 1.8 m by 0.5 m thick. Finds such as ceramics, clay pipes, animal bones and bone **Special Finds** were prevalent. From SD12455, stove tile FO202816 was a very interesting find as it comprised a Germanic type flute player motif moulded onto a *Sjælland* fabric, the design dated to the 1480s and exemplifies the use of foreign ideas with Danish materials (David Gaimster pers. com). Personal finds are represented by decorative artefacts such as bone beads (FO203257) and amber beads (FO203259).

Land reclamation G434



Group G434 was a collection of rich sand deposits perhaps used as bedding for the cobbled road G430, and levelling activity in this area. The group measured 12.79 m by 0.9 m by 0.1 m and directly underlay the road group G430. The group comprised three thin sand and silt deposits, SD10518, SD11204 and SD11648 beneath road group G430. Each deposit within consisted of some slight anaerobic soil conditions. It was later truncated by 20th Century pipes and culverts.

Fig. 80 Stove tile with a boy playing the flute. A Germanic mould on Sjælland fabric dating to 1480s. FO202816, SD12455, Group G435. Museum of Copenhagen.

Land reclamation G495

At the eastern end of the Guide Wall trench, in Area 3 was G495. This group consisted of a total of five dump deposits ranging from clay silts, to silt rich clays, to sand rich clays. This suggests that the different soil deposits originate from different areas of the city. From the watching brief results it appears that soil was dumped upon a large quantity of stone, probably part of the rear side of wall G532. This group functioned as the bedding for harbour road G430 and levelling in this area of the trench.

Land reclamation G702

Directly south and east of group G495 was Group G702, a land reclamation or levelling group that was similar in date to G495. The group comprised seven deposits that measured 6.17 m long by 0.6 m wide by 0.2 m deep. The makeup of the deposits varied, from alluvial sands to organic and humic silts and clays. Only deposit SD16357 comprised finds and along with the manure rich fill it has been interpreted as an urban waste dump behind the new harbour wall.

Land reclamation G521

Group G521, located at 0.15 m OD was the final group of the reclamation groups. Unlike all the other land reclamation groups there was no visible link with the harbour path. It would appear that the group was a simple rubbish dump to increase the ground level and backfill the area behind harbour wall G532. The finds of clay pipe in the deposit may represent clay pipe usage in early 17th Century Copenhagen or later contamination.

7.2.6.3.1. Discussion

Groups G434, G435, G436, 647, G495, G521 and G702 were a mixture of land reclamation and levelling groups north of the wall. The lower groups were pure land reclamation groups deposited straight after the wall was in place to solidify the new area. These were overlaid at some point by groups such as G434 and G495 which were the base for the new harbour path or road G430, and functioned as bedding groups and levelling groups for a flat road surface. As the Guide Wall excavation stopped at two metres below surface, it was hard to differentiate between the land reclamation and levelling purpose of the groups, so they have been labelled both, unless the groups were related to road surface G430.

7.2.6.4. Harbour road G430

Group	Subgroups	Group name
430		Harbour road

Table 24 Group 430 Harbour road

The harbour path/road, G430, was found in fragments within Trench 1, 2A and 3 in the Guide Wall excavation. It was greatly truncated by later culverts and land ties from Phase 4 and modern truncations in Phase 6. In the Guide Wall trench the road spread over 74 m, of which 24 m of the harbour road was seen. It was located at the average height OD of 0.55 m.



7.2.6.4.1. Description

Group G430 comprised three cobbled stone surfaces, SS11789 in Trench 1, SS10493 in Trench 2A and SS14909 in Trench 3. The road is orientated NE-SW and continues into the northern section of the Guide Wall trench. The cobbled stone road comprised many unfinished stones measuring on average 0.2 m by 0.2 m by 0.1 m that were tightly compacted together. The road was built within similar construction cuts in the three exposed areas. The stone surface was held in place by planks to the north and south which were laid horizontally on their side. A series of stakes were then driven into the ground vertically to the north and south of the planks to keep them in position.

Fig. 81 Working photo of Road Group 430 looking SW in Trench 1 of the Guide Wall trench. The photo comprises road deposit 11789 at rear and road deposit 10493 in foreground. C03_20120723_5083

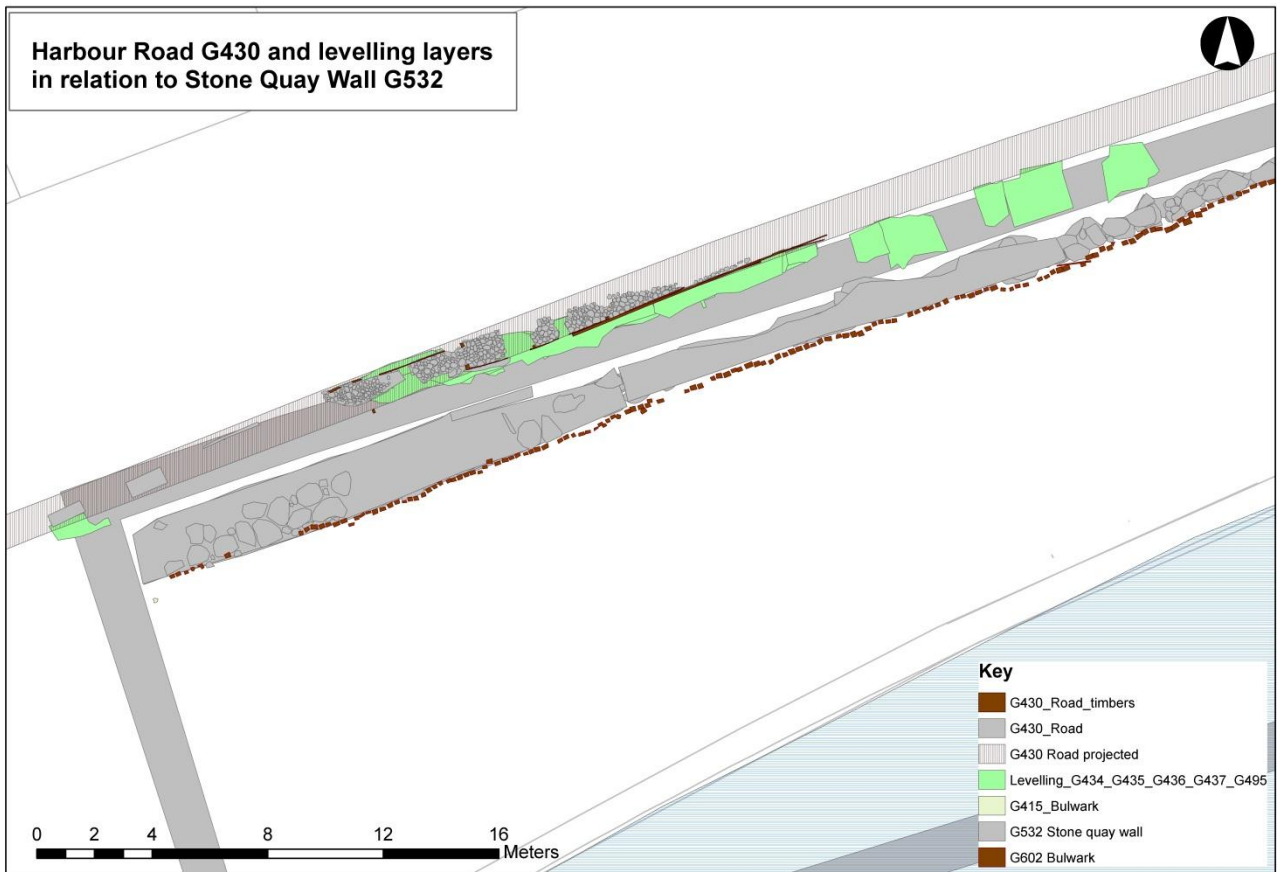


Fig. 82 Plan of western part of road G430, and underlying levelling layers

In Trench 1, road surface SS11789 was found to measure 15 m long by 1 m wide and was laid within cuts SC10413 and SC11286, along with many stakes and planks. This is illustrated in Fig. 82. Cut SC10413 comprised the southern plank system ST9691, ST10421; stakes ST10430, ST11340, ST11346, ST11396, and ST11278, ST11286, ST11930, ST11934 and stone surface SS11789. The sides were two planks thick with each plank system comprising many fragments or were possible replacement planks. The northern road plank system ST11934 was truncated by the trench shoring and no cut was seen. Road surface SS10493 merges into surface SS11789 and is bounded to the south by plank ST10421. The road surfaces were covered by manure deposits SD11309 and G10244 from Group G429 from Phase 4 suggesting the end of use of the road, and that it was only in use in Phases 2 and 3.

Road SS14909 in Trench 3, as seen in Fig. 83 and Fig. 84, measures approximately 4.4 m long by 0.68 m wide and is truncated into many parts. It was laid within cut SC16333 and abuts plank ST14075 to the south. The plank is kept in position by vertical stake posts ST14075, ST14343 and ST16389 to the south. Overlying the road surface were two manure rich deposits SD14317 and SD14666. They were very similar in consistency, content and colour to the deposits from group G429 overlying road surfaces SS11789 and SS10493. The deposit contained charcoal, wood, clay pipe, ceramics and bone and, from PM214887, evidence of some seeds and fruits, but no evidence of plants from meadows. There was an occurrence of nutshell fragments from hazel, seeds from fig and flax, fruits from hops and a charred seed from barley (Ranheden 2016, 43).

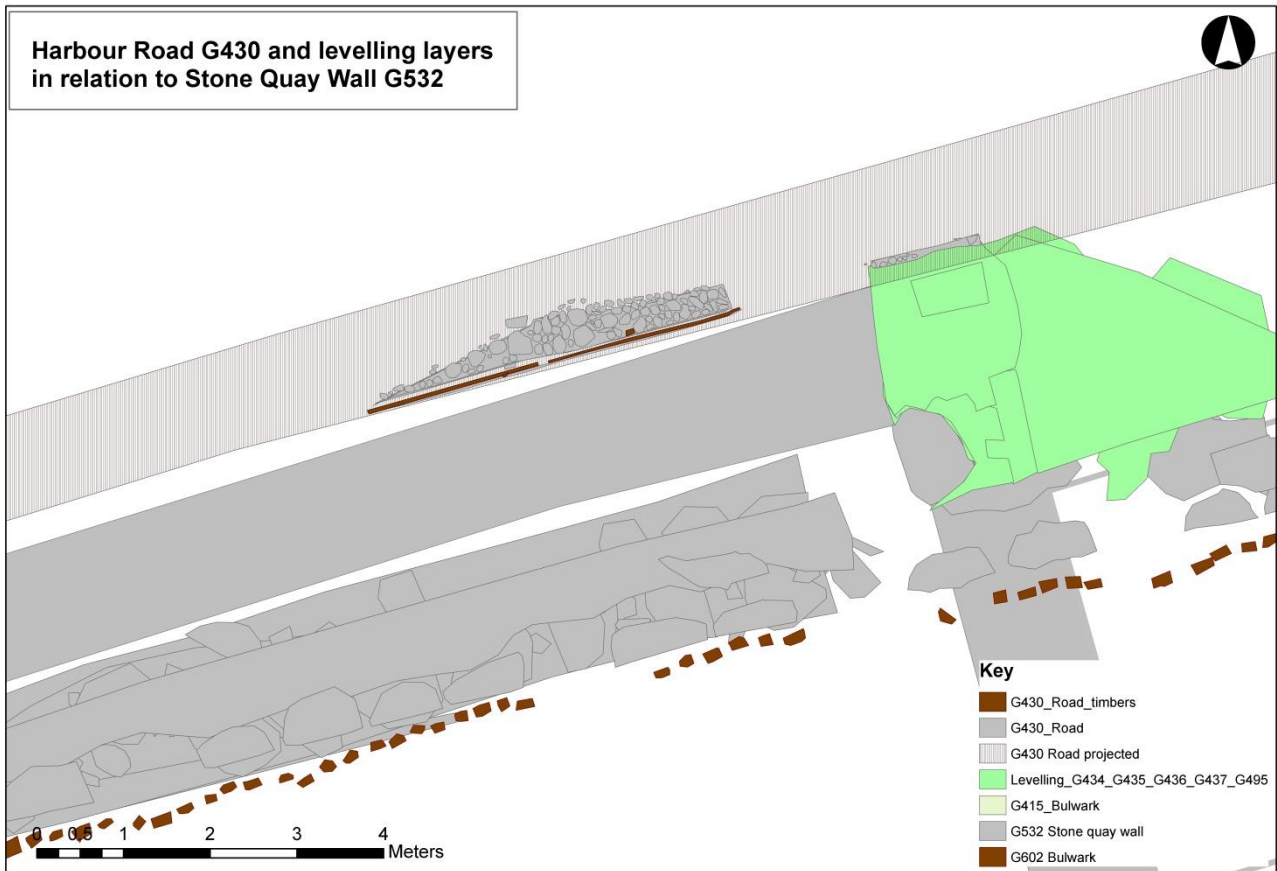


Fig. 83 Plan of eastern part of road G430, with the underlying levelling layers

7.2.6.4.2. Discussion

The road surfaces appeared to represent a harbourside road dating from the 16th and 17th Centuries. This was suggested from the stratigraphy and from the finds, i.e. clay pipes and pottery, embedded within the surface. Unfortunately the wood was too fragmented to be used for dendrochronology. The construction cut for the road truncated the construction deposit for the known upper reaches of Renaissance quay wall group G532. It was presumed from the artefactual evidence that the road construction occurred in the same phase as the harbour wall. Although the road was quite narrow at 1 m wide it was found to continue into the northern boundary of the Guide Wall trench. It is believed that the road was wider than that which has been exposed, leading into an area not seen from excavation. Evidence of many planks in the planking system, laid in crude fashion suggests a haphazard way of construction and maintenance.

Although some parts of the road contained embedded finds, it is expected to have been kept relatively clean. Around 1624, a Brofoged ("paving inspector") was appointed. Their role was to manage the cleanliness of the streets so that dirt would not flow into the harbour as a large amount of costs had been spent repairing and cleaning the harbour. (Nielsen 1874, nr. 790, 754).

7.2.7. Postholes

7.2.7.1. Introduction & description

Group	Sub-groups	Group name
439		Posthole
489		Posthole

Table 25 Groups related to postholes

Posthole G439

Group 439 comprised a posthole that represented a former vertical post on the southern side of harbour road G430 in Trench 1. The location of the post is interesting as all the posts linked to the horizontal boundaries of the road were found on the planks' northern side. The cut SC10555 located at 0.42 m OD, truncated deposits SD10543 and SD12133, the base for the harbour road G430, and was filled by a sterile sand deposit SD10562, possibly when the road went out of use at the end of Phase 3. The purpose of the post is unknown; perhaps part of a truncated fence line or a place to tie up ships. Due to the area being heavily truncated in the early 1900s by a new gas pipe, similar locations were removed which may have contained similar posts.

Posthole G489

Within the Guide Wall trench in the Trench 3 area, and south of the eastern part of road group G430 was a small shallow pit, G489, located at 0.56 m OD. As the pit truncated the land reclamation layers it is puzzling why this occurred in Phase 4, robbing and removal of areas when building the Phase 4 harbour is seen across the site to create a flat and even surface for the new land tie systems. The pit group measured 0.53 m by 0.36 m by 0.12 m and the shallow sub-circular pit was filled by a whitish grey ash and clay deposit. Only fragments of wood and bark were found within the backfill. As it was near the Renaissance period road it may have been created whilst building the road, and then backfilled when the Renaissance harbour construction was completed.

7.2.8. The end of Phase 2

At the end of Phase 2, Gammel Strand obtains various commercial trading bodies. The Copenhagen harbour had already obtained special privileges to trade with Iceland in 1547 for a few years (at the end of the Phase 1 period on Gammel Strand), and a loading area was assigned (Deggim 2005, 50). The privileges were re-instated in the early 1600s.

By 1616 the Danish East India Company was created, with the headquarters on Gammel Strand (Deggim 2005, 222-3). This company became very powerful in Denmark setting up the colony of Tranquebar (1620) in India to allow trading with India and the Far East. The new goods coming into Copenhagen led to the transformation of the whole harbour area within Copenhagen and expansion of the harbour region in Phase 3 at Gammel Strand.

A sign of increased trade is also seen with the establishment of a sister town, Christianshavn, built to the south between the years 1606-19. Within this new settlement the citizens were awarded trade privileges (Nielsen 1872, nr. 421, 593-94). Slotsholmen, linked mainly to the monarchy and the navy, was increased in size from 1615-20. On this island various military and royal structures were either constructed or enlarged with buildings such as the arsenal, and a new enclosed port being created. Directly east was located the new Børsen building, functioning as the first proper trading centre in Scandinavia (Deggim 2005, 52).

7.2.9. Phase 2 conclusion

7.2.9.1. Introduction

In many respects, Phase 2 contains less activity than all the other phases. It is short lived, and in retrospect, Phases 2 and 3 could be joined together as they represent two phases of the Renaissance harbourside which last from c.1570-1690. Phase 2 comprises the earliest (definite) stone harbour seen at Gammel Strand and portrays the wealth of the city and importance of maritime trade to the city.

7.2.9.2. The harbour wall and structures

The wooden harbourside from Phase 1 was not adequate to fulfil the needs of the Copenhagen Renaissance harbour of Phase 2. It was old and neither strong enough nor representative of what a harbourside should be in an important European capital city. The facilities would have been upgraded, to bring the harbour up to standard which is shown with the new construction at Gammel Strand. A stone harbour front is stronger than a wooden harbour front, and would last longer, so although expensive at the beginning, the cost would decrease as maintenance or replacement of parts of the wall would decrease. The granite boulders for the foundations were collected from all over *Sjælland* from stones that had arrived on the island as a result of glaciation. The limestone came from various areas, with Stevns Klint being one such possible site. It was then cut, dressed and brought to Gammel Strand. The wood used for the bulwark also represents wealth, and as in Phase 1, it was cut from oak from areas surrounding Copenhagen, from *Sjælland, Skåne* or *Hålland*.

A stone harbour front is also a symbol of power as it represents wealth and a growing economy to afford such things. This statement would have appeared attractive to foreign merchants and nations as good facilities are one of the main reasons to trade with Copenhagen, and with the city's fortifications surrounding the harbour, the foreign and local merchants would also feel safer using the harbour.

To run a harbour effectively, control must be placed on the harbourside. This was seen by the construction of the new *Vejerhus*, which at various parts of this phase also comprised an *Accisehus* function. The new structure with the weighing and tax functions would enable the King and the Burgomasters to collect tax and govern what was received and sent out of the harbourside. With the fiscal benefits being so high for the elites a new building was needed, and the construction of a vast new structure was fulfilled in the new *Vejerhus*. The location of the structure on the harbour front would allow quicker use of all the tax and fiscal parts of the trade system, and its close proximity to the Renaissance markets on *Gammel Torv* and *Amager Torv* would also be a determining factor as the movement of goods to the market place would be a short journey.

After describing the functional and symbolic nature of the harbourside, the date of the construction should also be addressed. The key to the new date of the harbour is linked to the felling of the oak posts, undertaken in the winter 1557/1558. The posts were new cuts that appear to have been fashioned for this harbourside. The posts would have been waiting to be used for 25 years if we use the historical date of 1583 given by Valkendorf for completing the harbourside. It does not seem economical to cut the wood and store it for 25 years. This leads to many suggestions; either the harbour wall was built in the early 1560s, or the harbour was built over a long period of time or perhaps Valkendorf claimed credit for the construction or reconstruction. It is believed by the authors that the wall is actually earlier, from the early 1560s, and the Valkendorf credit belongs to a reconstruction or refashioning of the walls in the late 1570s or

early 1580s. Obviously the harbour wall could not have been built all in one short phase, as the harbour still needs to function, but it is expected it could be built over a few years, and with the new construction of the *Vejerhus* and dredging in the late 1570s and early 1580s it is logical that repair to the walls also occurred around the same date.

The harbour wall was not built in the same style, or with the same materials along the length of the exposed wall. This was seen whilst excavating and demolishing the structure within the Main Excavation trench. It is expected that localization occurred along its length due to the availability of materials. Constant maintenance during the wall's extended use may have led to areas being repaired or sections rebuilt. This maintenance was recorded in sources in 1620 (Nielsen 1874, nr. 790,754). It is expected that only large scale maintenance was recorded, and small scale reconstruction occurred when needed. Ships or wrecks filling up the harbour were also mentioned many times in sources. They were recorded, mainly linked to trade and that they should be removed to enable trade to flow; 1584 (Nielsen 1872, nr. 365, 543), 1590 harbour (Nielsen 1874, nr. 547, 38). It is probable that they were removed to prevent damage to the wall from tying up the boats to the bulwarks and boats smashing the bulwarks, and thus the wall after.

7.2.9.3. The harbour base and discarding of rubbish in the harbour

The artefacts from Phase 2 were found within harbour activity and alluvial layers in G642, within structures G532, land reclamation layers behind the wall G435 and within usage layers of structures as seen within road G430 and harbour wall culverts G476 and G477.

As discussed in Phase 1, various Medieval deposits at the bottom of the harbour within groups G647, G678 and G667 were affected by dredging activity in the harbour in Phase 2. Some of the deposits that were fully enclosed under wall G532 were not affected by this activity, but many deposits such as SD37646 from G647 and SD54997 and SD40492 especially from SG667 were placed partly beneath G532 and then continued into the Phase 2 harbour area. This meant that parts of the deposits were pure Medieval and the other parts were dredged in Phase 2 and thus comprised Phase 2 finds.

Much effort was made to limit the amount of waste and rubbish thrown into the harbour, with people asked to report anyone throwing waste into the harbour in 1590, (Nielsen 1874, nr. 547, 446 §36), and in 1620 (Nielsen 1874, nr. 714, 623, §9). This situation had obviously proliferated for the creation of a *Brofoged* ("paving inspector") position in 1624 to manage the cleanliness of the streets so that dirt would not flow into the harbour. (Nielsen 1874, nr. 790, 754).

Group G642 was a collection of layers that were formed by harbour activity and dumping at the base of the harbour at the western end of the Main Excavation and in the Stairway trench. This dumping activity occurred mostly from the landward side which can be seen in section profiles. They were formed after wall G532 and bulwark G602 was in place, and overlay both parts of these features, mostly over bulwark G602 as it was located south of G532. These groups overlay the former Medieval deposits at the western end of the trench but were not seen in the central and eastern parts of the harbour due to dredging. They instead survived due to the construction of a harbour extension in the western area at the start of Phase 3.

Groups G434, G435, G436, 647, G495, G521 and G702 were a mixture of land reclamation and levelling groups north of the wall. The lower groups were pure land reclamation groups deposited straight after the wall was in place. These were overlain at some point, by groups such as G434 and G495 which were the

base for the new harbour path or road G430, functioning as joint bedding groups and levelling groups for a flat road surface.

7.2.9.4. Conclusions from finds and natural sciences

The finds from Phase 2, as with every other phase, represent the Copenhagener or the visitor to Copenhagen, in its examples of everyday life, differential status, fashion etc. Unlike every other phase it appears more obvious that there is more evidence of the elite from the rubbish in this phase, which was expected from the location and the elite inhabitants who lived in the area.

New levelling layers behind and to the north of the harbour wall, and waste found dumped in the harbour over the wall or from ships represents the activity from which finds were retrieved. The artefacts comprise many imported Majolica, stoneware and Faience ceramic vessels from the Netherlands and the area that is now modern Germany with a few vessels from further afield. The glass vessels were mainly also from the same regions. The act of dredging had mixed the finds in the harbourside pushing the artefacts into earlier, Late Medieval deposits in the harbour. As with Phase 1, the finds behind and to the north of the wall and in the far west of the main trench under the later Phase 3 structure, were found in secure contexts and represent the societies of the time, such as the elites living at Gammel Strand. Here we see the continuance of consumerism, as in Phase 1, with Renaissance societies importing fine goods from abroad, mainly from around the Baltic, and also starting the new elite pastimes, such as smoking. The clay pipes from this phase are imported, mostly from the Netherlands, with some from England. The Netherlands appeared to get a cultural hold on trade in Copenhagen in this period not only in artefacts but also in new architecture and this would propel Copenhagen into the Proto-globalisation period with their new luxury goods.

For a deeper insight of the archaeological finds from Phase 2, please see the various artefact reports.

Phase 2 ceramics

Kristensen (2016b, 24) writes that there were 213 ceramic sherds from the later Post-medieval period. A small amount of sherds date back to the later part of the 16th Century but most of the sherds related to Phase 2 are of typical 17th Century types. The majority of the sherds were Danish from Jutland representing regional trade. Dutch sherds were in the form of tin-glazed earthenware and white wares are well represented but it is mainly the redware kitchen utensils which dominate the Dutch ceramic imports. German imports are also frequent; these are generally composed of different kinds of stoneware from the Rhineland area. Two sherds of Chinese porcelain were also discovered. One of the porcelain sherds dates to c. 1680-1750 while the other dates to 1700-1750 and these sherds are of a later date than the general ceramic assemblage from this phase. This must represent later intrusion into the deposits by later construction. The forms are varied and consist mostly of pots, jugs, mugs, bowls, and dishes but many subtypes occur. Much of the ceramics bear signs of use and in this way cannot be associated directly with the trading activity at Gammel Strand (Kristensen 2016b, 24).

There were only a few Medieval residual sherds in this deposit, located within the make up of the harbour wall G532 and within the foundations of the harbour wall culvert G477. These Late Medieval Siegburg sherds probably relate to disturbance of the underlying layers and layers behind the newly created Phase 2 harbour.

Phase 2 clay pipe

The clay pipes analysed in Phase 2 numbered 67 fragments from the prioritized contexts, and reflect a percentage of those collected from this phase. Many could not be narrowed in their date, nor could their provenance be seen. They reflect the start of smoking within Denmark and new trade networks linked to the manufacture of clay pipes and import of tobacco from the Netherlands.

Phase 2 glass

The glass from Phase 2 comprised 46% table glass, 30.7% bottle glass and 21.3% window glass and 2% other glass. Within the deposits were some residual Medieval sherds and later Phase 3 pollution due to dredging in the harbour. The majority of the glass comprised used fragments, the result of use within the urban landscape rather than dumping in the harbour. It was in this period that the fine table glass arrived in large quantities in the assemblage, representing the new wealth flowing into Copenhagen. This was seen in the remains of *Pasglas*, *Röhmer* glass, Club beakers and *Humpen* glass and winged vessels imported from the modern Netherlands area, Germany and perhaps from Venice. This was also seen in the Metro Cityring excavations at Kongens Nytorv and Rådhuspladsen, though not in the same quantity in the same time period. The high status of the glass represents the wealth of the people living around the harbour. This is also suggested by the large size of the sherds representing primary dumping straight from households (Haggren 2016, 35).

Phase 2 animal bones

The animal bones prioritized for this phase consisted of 2932 fragments weighing 12255g representing 53 species of fish, mammal, crustaceans, molluscs and birds. All these species can be found in Denmark today but not all were found there in the Early Renaissance. As expected the mammals (50% of the total amount) and fish (43% of the total amount) were the most represented. Birds represented approximately 8%, and amphibians less than 1%.

The mammals were mostly domesticated species for consumption, which is to be expected within an urban setting. Evidence of a higher status diet was seen in the mammal remains. The presence of young lambs butchered before end of season, before fattening, and the discovery of game such as red and roe deer and other wild species that only could be hunted by elites and the king shows consumption that could have only occurred amongst the elites (Bangsgaard et al 2016, 28). This only changed in 1840 (Bangsgaard et al 2016, 49). The bird remains were mostly from domesticated species with goose and hen the most represented and duck to a lesser degree. This represents a fairly common and expected assemblage.

Phase 2 fish & mollusc remains

The large collection and mixture of freshwater and saltwater fish was also expected with the contexts representing the discarded remains of the Copenhageners diet from fish caught in and around Copenhagen from freshwater and around the Danish seas. The discovery of shore crabs represents crustaceans actually living in the brackish harbour region.

Phase 2 Macrofossil remains

Evidence of diet and the local environment was revealed from the macrofossil remains. Sample PM212502 from SD41357 revealed the brackish soil conditions that were expected in the harbour base in the early Renaissance period. Sample PM214879 from SD41178 of culvert group G477 represented the action of culvert use with the remains of both local weeds and cultivated plants within the area flushed into the

harbour. The presence of figs shows high status diet in the area revealing consumption and trade routes. This was also seen in sample PM213658 from SD55010, this deposit revealed cultivated plants from the city, and little remains of meadow plants and weeds, with a mixture of plants cultivated for industry, in regards to hemp and hops for brewing, buckwheat for bakers or perhaps packing for the transport of clay pipes and clay pipes and figs for high status diet.