

Keflavík on Hegranes: Cemetery Excavation
Interim Report 2017



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BSk 2017-191/SCASS-20

Picture on front page – Drone photo of the Keflavík cemetery.



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Útdráttur á Íslensku

Sumarið 2015 hófst uppgröftur kirkjugarðs og kirkju í Keflavík í Hegranesi. Uppgröfturinn er hluti af þverfaglegu þriggja ára íslensk-bandarísku rannsóknarverkefni, Skagfirsku kirkju- og byggðasögurannsókninni (Skagafjörður Church and Settlement Suvey – SCASS). Rannsóknin er samstarfsverkefni Byggðasafns Skagfirðinga (BSk) og Fiske rannsóknarstofnunarinnar í fornleifafræði við Massachusetts háskóla í Boston (UMass Boston). Rannsóknin er sjálfstætt framhald tveggja rannsóknarverkefna, Skagfirsku kirkjurannsókninni á vegum BSk og Skagfirsku byggðasögurannsókninni (Skagafjörður Archaeological Settlement Survey - SASS) á vegum bandaríska rannsóknarhópsins. Rannsóknin er unnin fyrir styrk frá Bandaríska rannsóknarráðinu (National Science Foundation - Grant #1417772).

Rannsóknarsvæðið nær yfir allar jarðir í Hegranesi eða Rípurhreppi hinum forna. Verkefnið miðar að því að nota aðferðarfræði beggja fyrrgreindra rannsóknarverkefna til að skoða heildstætt kirkju- og byggðasögu svæðisins. Á þann hátt fæst ný mynd af því hvort samhengi er á milli stærðar jarða við landnám, þróun byggðar og hvort og hvenær kirkjur/ kirkjugarðar eru stofnaðir og/eða aflagðir á jörðunum.

Upphaflega var ætlunin að rannsóknin væri yfirlitsrannsókn sem byggðist á minniháttar fornleifafræðilegu inngripi, borkjarnatöku, jarð-sjármælingum og könnunarskurðum. Fyndist kirkjugarður sem ekki lægi undir yngri minjum og sem hægt væri að rannsaka án vandkvæða fyrir ábúendur, var hugmyndin að gera heildstæðari hluta- eða fullnaðaruppgröft á honum. Uppgröftur kirkjugarðs var því ekki hluti af upphaflegri rannsóknaráætlun SCASS. Þegar kirkjugarður kom í ljós við lagningu rafstrengs í Keflavík á Hegranesi 2013 var ákveðið að fara í rannsókn hans meðfram SCASS rannsókninni ef styrkur fengist til verksins. Þannig mætti samnýta sérfræðinga, tækjabúnað, og aðra aðstöðu sem til staðar er í tengslum við SCASS rannsóknina.



Styrkur fékkst úr Fornminjasjóði og var hafist handa við áætlaðan þriggja ára uppgröft í Keflavík sumarið 2015. Eftir að búið var að hreinsa í burtu 20. aldar ruslahaug sem lá yfir vesturenda garðsins varð ljóst að garðurinn lá allur undir gjósku úr Heklu frá 1300. Einungis voru um 10-30cm frá gjóskunni niður á yfirborð garðsins. Kirkjugarðurinn hefur verið girtur af með hringlaga torfgarði, 17m í þvermál. Í miðju garðs voru leifar kirkju sem reist hefur verið úr timbri með niðurgröfnum hornstoðum og utanáliggjandi torfveggjum á þrjá vegu en timburpil til vesturs. Ummerki fundust um a.m.k. tvennar viðgerðir á kirkjunni, bæði á 11. og 12. öld. Bæði kirkja og kirkjugarðsveggur hafa verið fjarlægð og svæðið sléttað einhvern tímann á 12. öld þar sem að ljóst var að kirkja og garður hafa staðið þegar að gjóska úr Heklu féll um 1104. Sú gjóska lá annars yfir garðinum öllum. Sjá mátti ummerki um að 8 grafir hafa verið teknar í gegn um gjóskuna sem styður að kirkjugarðurinn var í notkun fram á 12. öld. Sumarið 2015 voru grafnar upp 14 grafir, 8 yngri en 1104 og 6 sem gjóskan lá óhreyfð yfir. Kirkjugarðurinn var að mestu vel varðveittur. Þó hafði rotþró verið grafin í norðvesturhorn hans um miðja 20. öldina og RARIK hafði, 2013, grafið skurð við norðaustur horn kirkjunnar sem hafði skemmt a.m.k þrjár grafir auk þess sem rafstrengur hafði verið plægður þvert gegn um austur enda garðsins.

Sumarið 2016 var svo að mestu lokið við að grafa upp kirkjuna og virðist hún hafa verið svipuð að stærð og gerð frá upphafi, um 3,8x2,6m að innanmáli. Upphaflega virtist sem kór stæði út frá miðri austur hlið kirkjunnar en engir eiginlegir veggir fundust 2016,

heldur virðist hafa verið 1,5m breitt bil/op í austur torfveggnum. Ef til vill hefur þar verið op eða gluggi á timburpílinu til austurs. Timburgólf hefur verið í kirkjunni og fundust nokkrar viðarleifar úr því.

Grafnar voru upp alls 30 grafir, þar af voru 3 grafir sem höfðu verið tæmdar í byrjun 11. aldar. Grafirnar voru norðan, austan og sunnan kirkjunnar en engar grafir fundust í vesturhelmingi garðs. Líkkistur hafa verið í um 60% grafa en engir aðrir gripir, utan örfáir naglar, fundust í gröfum. Hins vegar fundust merki um að grafir hafi verið merktar með steinum á yfirborði, auk þess sem steinar hafa verið lagðir í þær, bæði í graffyllinguna og svo á og við líkin, oftast til að skorða af höfuð. Einnig virtust steinar hafa verið lagðir ofan á kistur.

Alls fundust og voru skráðir 24 gripir. Flestir gripanna voru steinar og naglar en markverðustu fundir sumarsins voru hluti af hryggjarlið úr hval og silfurpeningur sem báðir fundust í gólfi kirkjunnar.

Alls voru 27 beinagrindur grafnar upp flestar ágætlega varðveittar. Þó höfðu a.m.k. 7 grafir skemmst við plægingu rafstrengs 2013 og voru bein að hluta úr lagi gengin og/eða brotin í fimm þeirra.

Í garðinn hefur verið lagt torf til að slétta hann einhvern tímann á 11. öld og lá torflagið í austur helmingi garðs. Ljóst er að lagið hefur ekki verið í garðinum frá upphafi þar sem að það lá að hluta ofan á gröfum sem næst voru kirkjunni að austanverðu.

Sumarið 2017 er ætlunin að klára að grafa grunn kirkjunnar og fjarlægja leifar kirkjugarðsveggjarins til að kanna hvort grafir leynist undir þeim. Einnig verður lokið við að grafa upp þær 5 grafir sem vitað er um auk annarra grafa sem kunna að finnast. Þá þarf að moka aftur yfir svæðið og ganga frá því á viðeigandi hátt.

Rannsóknir 2017

Sumarið 2017 var lokið við að grafa þær grafir sem eftir voru í kirkjugarðinum. Einnig var lokið við uppgröft kirkjunnar og leifar kirkjugarðsveggjarins voru fjarlægðar að fullu til að kanna hvort grafir reyndust undir garðinum. Við verklok 2016 komu fram vísbendingar um byggingu ofan og vestan við innganginn í kirkjugarðinn og var 4x5m svæði hreinsað

upp vestan kirkjugarðsins til að kanna hvernig minjar væri um að ræða.

Alls voru grafnar upp sjö grafir, fjórar grafir fullorðinna og tvær ungbarnagrafir. Í ljós kom þriðja gröfin sem bein hafa verið fjarlægð úr austan kórs. Í heild hafa því fjórar grafir verið tæmdar þegar kirkjan og kirkjugarðurinn voru aflögð. Ekki var hægt að ákvarða hvort gröfin hafði innihaldið barn eða fullorðinn en hún var nokkru grynri en hinar tvær grafirnar þannig að mögulega hefur þarna verið barnsgröf. Fimm grafanna höfðu skemmst af völdum plægingar jarðstrengs. Strengurinn lá í gegnum fótenda þriggja grafa og höfðu fótabein brotnað og gengið til í tveimur grafanna. Ein ungbarnagröf hafði alveg eyðilagst en beinin fundust við sigtun á rótuðum jarðvegi í plógarinu. Um helmingur hinnar ungbarnagrafarinnar hafði eyðilagst. Bein voru annars ágætlega varðveitt en eitthvað brotin og flögnuð þar sem graffyllingar innihéldu þunga, grófa jökulmól.

Grafmerking var á einni grafanna [38]. Um var að ræða stóran náttúrustein sem hafði verið komið fyrir í vesturenda grafarinnar. Til að skorða steininn hafði verið grafin hola ofan í höfuðenda grafarinnar og steininn lagður í hana. Fá þurfti stórvirka vinnuvél til að fjarlægja steininn sem reyndist um 900 kg. að þyngd. Kistur voru í öllum gröfum fullorðinna en ekki í gröfum ungbarnanna.

Við uppgröftinn var endanlega staðfest að kór hafði verið á kirkjunni þar sem að í ljós kom stoðarhola í suðausturhorni kórsins. Stoðarhola í norðaustur horni hafði eyðilagst við plægingu jarðstrengsins.. Kirkjan hefur verið 3,6x2,8m að innanmáli með kóri fyrir miðjum austurvegg 2x2m að stærð. Torf hefur verið upp við báðar langhliðar kirkjunnar. Óvíst er hvort að kórinn hefur líka verið klæddur torfi þar en svæðið var mjög rótað eftir að kirkjan var tekin niður og grafirnar austan kórsins tæmdar. Niðurlagning kirkjunnar og tæming grafa hefur líklega gerst á svipuðum tíma, einhverntímann á fyrri hluta 12. aldar.

Í austur hluta garðsins var rótað torf lag sem hefur verið sett til að slétta garðinn þar sem hann lá í brekku. Ljóst var að uppfallingalagið er ekki frá því að byrjað var að grefta í garðinum þar sem nokkrar grafir austan

kirkjunnar lágu undir þessu torflagi. Grafirnar virðast þó hafa verið teknar eftir að kirkjan var reist þar sem þær lágu sitt hvor megin við kórin. Jarðsjármælingar höfðu gefið til kynna að grafir kynnu að leynast undir kirkjugarðsveggnum. Leifar veggjarins voru því fjarlægðar og grafið niður á óhreyft. Ljóst varð að garðurinn, líkt og kirkja og grafir eru tilkomin eftir að dökkt gjóskulag sem féll um eða skömmu fyrir 1000 e.Kr. Hinsvegar fundust engar grafir eða aðrar mannvistarleifar undir garðinum en dálítill móösku og koladreif undir fyrrnefndu gjóskulagi.

Afstaða jarðlaga og grafa í kirkjugarðinum bentu til að hægt væri að greina notkunarskeið garðsins a.m.k. í þrennt. Fyrst voru 5 grafir sem lágu undir uppfyllingarlagi sem lagt hefur verið í garðinn austanverðann, einhverntímann snemma á notkunartíma garðs. Þetta torflag hefur verið notað til að slétta úr garðinum sem lá í dálitlum halla frá vestri til austurs. Uppfyllingarlagið myndaði einnig sléttan grunn fyrir kór kirkjunnar. Nokkrar grafir höfðu verið teknar í gegn um lagið, sérstaklega norðan til í garðinum þar sem lagið var þykkast. Þriðja notkunarskeiðið var svo eftir að Heklugjóskan frá 1104 féll. A.m.k. 8 grafir tilheyra því skeiði

en þær gætu alls hafa verið 12 hafi grafirnar sem tæmdar voru þegar kirkjan var aflögð einnig verið teknar eftir þann tíma. Uppgröftur þeirra á 12. öld kom hinsvegar í veg fyrir að hægt væri að ákvarða þar um. Gröf 3 var svo seinasta gröfin sem tekin var í garðinn en það hefur gerst eftir að kirkjan var tekin ofan því gröfin skar rótað torflag úr kirkjugarðsveggnum eftir að kirkjan hefur verið tekin ofan. Ljóst er að kirkja og garður hafa verið í notkun frá því um 1000 fram á fyrri hluta 12. aldar.

Inngangur í kirkjugarðinn var um hlið á vestanverðum kirkjugarðsveggnum. Þegar hluti af svæði þar vestan við var hreinsað var staðfest að byggingin sem hafði komið í ljós við lok uppgrafter 2016 var smiðjubygging. Hún hefur þó ekki verið samtíða kirkjugarðinum heldur aflögð líklega þegar á 10. öld. Ofan á smiðjuleifunum, til vesturs frá kirkjuhliðinu, lá upphlaðin stétt. Stéttin hefur vísast legið að bæjarhúsum sem garðurinn tilheyrði en engar leifar þess fundust. Meðfram stéttinni

vestanverðri var grunn renna, líklega fyrir affallsvatn. Rennan lá að hliðinu í kirkjugarðinn og greindist þar í tvennt, annarsvegar lá hún meðfram sunnanverðum kirkjugarðsveggnum að utanverðu, en hinsvegar lá hún niður gegnum sjálfan kirkjugarðinn sunnan kirkjunnar. Hún hvarf fyrir miðjum garði. Tilgangur þessarar rennu í kirkjugarðinum er ekki auðskýrður. Vera kann að vatnsagi hafi verið þar til vandræða þar sem að í gegnum neðanverðan suðausturhluta kirkjugarðsveggjarins var grjóthlaðið ræsi sem vatn hefur augljóslega runnið um. Þar var einnig lægsti hluti kirkjugarðsins. Áþekk grjótrenna lá í gegnum norðaustanverðan kirkjugarðsvegginn. Þar voru hinsvegar engin ummerki um að vatn hafi nokkurntíman runnið þannig að ef til vill hefur aldrei verið þörf fyrir þá rennu. Allar minjarnar vestan við kirkjugarðinn lágu undir 1104 gjóskulaginu óhreyfðu. Einungis var hreinsað ofan af minjunum en þær ekki grafnar til fullnustu.

Alls fundust 11 gripir. Átta þeirra voru járnnaclar úr kistu í gröf 38 en einnig fannst hvítur steinn, unnið hvalbein og brot úr brýni.

Að lokinni rannsókn var gengið endanlega frá svæðinu. Vestasti hluti þess var hulinn jarðvegsdúki þar sem að þar voru ógrafnar minjar. Jarðvegi úr haugum var komið aftur fyrir í brekkunni sem hluti garðsins lá undir og sléttað yfir þann hluta sem lá í túni. Þökur voru lagðar yfir þann hluta svæðisins sem var í brekku en grasfræi sáð annarsstaðar.

Introduction

The early Christian church and cemetery at Keflavík was excavated over three seasons: 2015-2017. The excavation comprised the third phase of the project Skagfirska kirkjurannsóknin (Skagafjörður Church Project) which has been run by the Skagafjörður Heritage Museum since 2008. It also forms a part of the Skagafjörður Church and Settlement Survey (SCASS), a three-year collective effort of the Skagafjörður Heritage Museum and the Fiske Center of the University of Massachusetts Boston. The site was discovered when human bones were found during the laying of an electricity cable at the modern-day farmstead of Keflavík on the peninsula of Hegranes in Skagafjörður, North Iceland. The initial site assessment showed that the cemetery might be well-preserved and not likely to be overlain by later archaeology. Therefore, the cemetery offered a rare opportunity to examine in its entirety a relatively undisturbed cemetery site and obtain comparative data both for the Skagafjörður Church Project as well as to provide a detailed cemetery and settlement profile for one of the farms examined through the SCASS project. The site has provided ample information on church development as well as the burial rites and demography of the Keflavík household. This report details the results of the three excavation seasons at the site.

Site discovery

The cemetery at Keflavík was discovered in October 2013, when the electricity company, RARIK, plowed down a high voltage electrical line through the homefield of the Keflavík farm. It was the farmer, Þórey Jónsdóttir, who noticed and reported archaeological remains in a trench that had been dug to facilitate the connection of a low voltage line to the main high voltage line. In the western section of the trench three cuts were visible, all lying under an unbroken line of the 1104 tephra. Human leg and foot bones were retrieved from the spoil heap confirming that the cuts were burials. The graves were oriented east-west suggesting it was a Christian cemetery, and fragments of badly

preserved timber indicated the presence of coffins. The existence of a Christian cemetery was not wholly unexpected as a medieval cartulary dating to 1394 recounts that a priest was paid for his service at Keflavík¹, indication that there was an operating family chapel at the time. However, there is no mention of a cemetery and burial was not permitted at late medieval household chapels. The results of the Skagafjörður Church Project point to early cemeteries being present at all later household chapel sites, as the chapels seem to have been a continuation of early Christian household churches which, as a rule, were associated with a cemetery.

Prior to the discovery of the early Christian cemetery in 2013, Keflavík had been surveyed in connection with the Skagafjörður Church Project. In 2008 the farm and its satellite farmsteads were registered and a number of test trenches were excavated. The 10th-century farmstead was located in the homefield east of the medieval-early modern farm mound but no unequivocal evidence for a cemetery was found in association with this site (Zoëga and Sigurðarson 2009). In the summer of 2012, extensive geophysical survey was conducted in the homefield. Again, there was no clear evidence of a cemetery (Bolender, et al. 2015). When the cemetery was finally located it was situated at the eastern edge of the medieval-early modern farm mound and just 20m west of the homefield boundary of the earliest farm. The 2015 excavation indicates activity at both farmstead locations during the 10th century although it has not yet been determined if there were two simultaneous domestic occupations.

In 2014 a joint project of the Skagafjörður Heritage Museum and the University of Massachusetts Boston, called the Skagafjörður Church and Settlement Survey (SCASS) received a large research grant from the National Science Foundation (NSF). The aim of the project is to systematically survey for the oldest settlement and church history in the area of Hegranes, a rocky promontory in the middle of the Skagafjörður region. The area is well suited for study as it is

¹ Diplomatarium Islandicum, III: 530.

geographically distinct and there is evidence for possible cemeteries at nine of the 12-13 original farms.

The complete excavation of one cemetery in Hegranes was part of the long-term plan for the SCASS project but funding for such an excavation was not included in the initial 3-year NSF budget. Excavation was originally planned as a follow up to the survey when and if a suitable cemetery was found. A prerequisite for the full excavation of a cemetery was that it would be situated somewhere excavations would not get in the way of every day farming activities and that no later architectural remains would need to be excavated in order to get down to the original level of cemetery. Good skeletal preservation was also paramount, as skeletal analysis lies at the heart of the household component of the early farmstead cemeteries. When the Keflavík cemetery was discovered in 2013 it emerged as an ideal candidate for a complete excavation. The evidence from the trench suggested there was only 30-50cm of soil on top of the cemetery and that skeletal material was sufficiently well preserved to warrant a full excavation. However, since the site was not included in the NSF budget an application was submitted to the Icelandic Archaeology Fund, who granted a large enough grant for the cemetery excavation. Hence, Icelandic archaeologists could be hired to work on the project alongside the American team of specialists and students.

Methodology

Excavation utilized a single context methodology following protocols modified from the Museum of London Archaeology Service (Westman (ed.) 1994). Graves were systematically recorded using a modified version of the Burial Record Form developed by the Arizona State Museum, University of Arizona. Spatial measurements were made in the field using a Trimble robotic total station and based on orthorectified photogrammetry composite images. All measurements and excavation geometries are stored in an ESRI-formatted geodatabase. Excavation data including context descriptions, grave excavation records, as well as sample, find, and photographic registries have been entered into a FileMaker relational database.

Geophysical survey grids were established from total station measurements for accurate correlation with the excavation results. Output from geophysical surveys has been integrated into the geodatabase structure. Original and processed geophysical datasets are stored on the SCASS servers in Iceland and Boston. The dating of the site was based on tephrochronology. Four tephra layers were most important for the interpretation of the site. Three tephra layers were of particular use of the dating of the site. Two tephra layers from Mount Hekla dating to AD 1300 and AD 1104 and a thin tephra layer from a Vatnajökull eruption, dated roughly to AD 1000 (Vj~1000).

Site opening

The area around the electrical trench that initially identified the cemetery was surveyed using geophysical techniques in an effort to define the boundaries of the cemetery. The first survey employed a CMD Explorer multi-sensor electromagnetic conductivity meter. Unfortunately, the electrical lines dominated the survey. A follow up ground penetrating radar (GPR) survey was conducted using a Malå X3M radar system that was equipped with a 500 MHz antenna. Based on these surveys an area of approximately 23x25 meters was targeted to encompass the cemetery, church, and enclosure walls. Most of the area lay to the east of the farm mound and coring revealed that there was little cultural material in the soil above the Hekla 1104 tephra layer. The western edge of the targeted excavation area overlapped the eroding eastern edge of the mound. Two 1x2 meter test pits were placed at the edge of the mound to determine the stratigraphic sequence and preservation of the mound (Figure 2). These test pits were used to guide the opening of the excavation area. The turf and upper layers of soil were mechanically cleared guided by the test pits and coring. Mechanical excavation was carefully supervised to check for any architectural features or intact middens. In general, the area was cleared down to the Hekla A.D. 1300 tephra. It is clear that almost the entire edge of the farm mound above the 1300 layer was made up late 20th-century rubble and a large, intrusive cesspit that was dug out

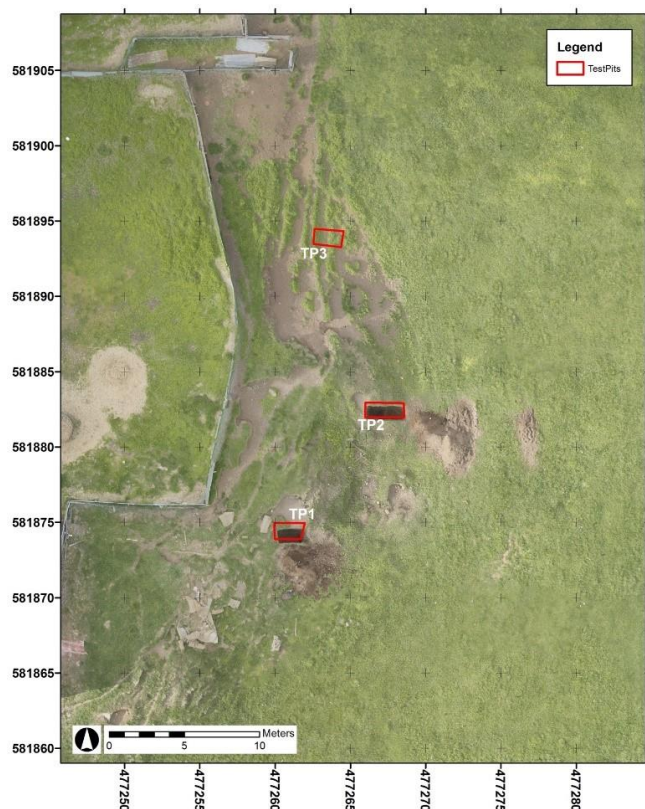


Figure 2. Test pit locations before turf removal for cemetery excavations.

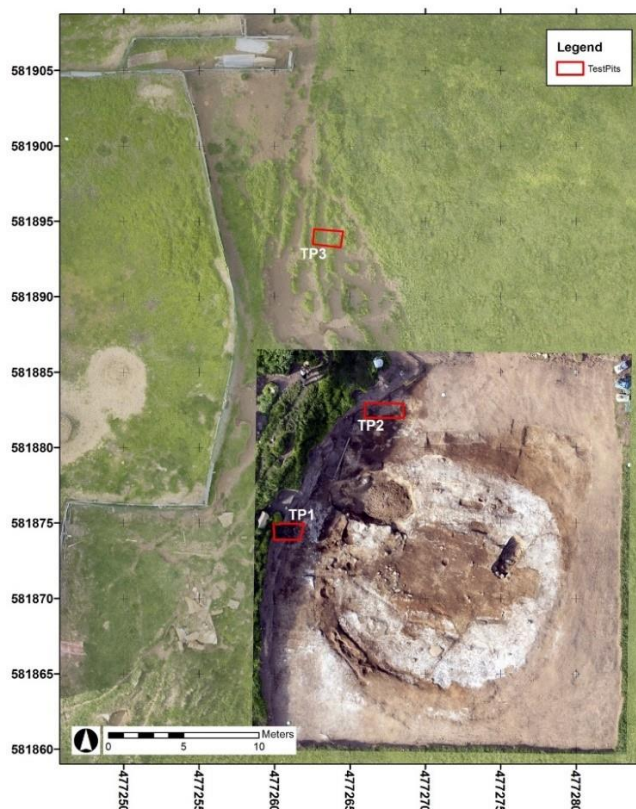


Figure 1. Test pit locations after turf removal and during cemetery excavations.

and filled with rubbish in the second half of the 20th century (Figure 1). A third test pit was excavated after the cemetery site was opened. All three test pits showed a similar sequence with most of the deposits post-dating the Hekla 1300 tephra. The deposits appear to consist primarily of ash. The first two test pits were only excavated to the white Hekla A.D. 1104 tephra. The third test pit included pink ash and charcoal deposits below the Vj~1000 tephra (Zoëga et al 2016). It is unclear if this is evidence for a domestic occupation at the upper Keflavík site prior to approximately A.D. 1000 or if they are related to the smithy. The deposits are similar to those found in association with the smithy in the main cemetery excavation area (see below).

After the cemetery area was opened the bottom half of the cesspit was excavated to remove all metallic remains and the entire area was shovel scraped to produce a relatively smooth surface in preparation for additional geophysical survey. The area was then measured by total station to create a topographic surface for modeling the GPR results. The area was then

surveyed using a CMD Mini-Explorer multi-sensor electromagnetic conductivity meter at a 0.20 meter transect interval. The same spacing was used for an additional GPR survey. GPR has been used effectively to identify individual graves and skeletons in Iceland.

Excavations 2015-2017

The cemetery is located on the eastern edge of the old farm mound, which was occupied until 1979 when the dwelling was moved to a new location on the east side of the farm (Pálsson 2010). The first two weeks of the 2015 season were spent cleaning the surface and removing a 20th century rubbish heap overlying the western part of the cemetery, the actual cemetery excavation extended over four weeks. Mechanical excavation was carefully supervised to check for any architectural features or intact middens. The area around the electrical trench that initially identified the cemetery was surveyed using geophysical techniques in an effort to define the boundaries of the cemetery. It became clear, that almost the entire edge of the farm

mound above the Hekla 1300 layer was made up of late 20th-century rubble. The only intrusion into the cemetery itself, however, was a cesspit from the mid-20th century, that had been dug into the western part of the cemetery and later filled with rubbish. The area was cleared down to the Hekla 1300 tephra and the cesspit was cleaned out before excavation began on the cemetery itself.

The initial surface clearing operation revealed the 1300 tephra in situ over the entire site and the rest of the cemetery excavations focused on the pre-1300 phase of the site. They revealed the remains a timber church with exterior turf walls, the base of a circular cemetery wall as well as 15 graves, 14 of which were fully excavated. The Hekla 1104 tephra layer was remarkably well-preserved with the in situ layer clearly outlining the inside and outside of the cemetery enclosure walls and covered the entire interior of the cemetery up to the edges the church in a near continuous sheet (figure 2) The preserved 1104 tephra revealed a largely flat cemetery surface with some dips. Eight graves had been cut through the tephra and four graves had been emptied post-1104. In 2016 the excavation of the church was largely finished, and 29 graves were excavated. The relationship of cemetery architecture and tephra layers indicated that the cemetery was established soon after a dark tephra, dated to around AD 1000, fell. The cemetery was still used for burial after 1104 and sometime in the first half of the 11th century the church, and cemetery were remodeled.

Pre-cemetery activity at Upper Keflavík

Test trenches, coring and a geophysical survey have established that there are two phases of occupation. About 50m below the cemetery, in a leveled hay-field, lies the first farmstead at Keflavík (“Lower Keflavík”), which was probably abandoned in the late 10th century or early 11th century. At that time the farmstead was relocated uphill (“Upper Keflavík”) and re-established just west of the cemetery which lay at the bottom of a natural hill.

Some human activity could be detected before the Vj~1000 tephra layer at the upper site and is mostly

likely associated with the farmstead at Lower Keflavík. The exact sequence of domestic activity and occupation between the two farmstead locations is unclear but the evidence suggests a simple sequential movement from one farmstead location to another close to A.D. 1000. The lower site remained in use, possibly as an area for barns or other special activities after the main farmstead was moved uphill. It is also clear that the Upper Keflavík location was in use during the occupation at Lower Keflavík. The extent of this activity is unclear.

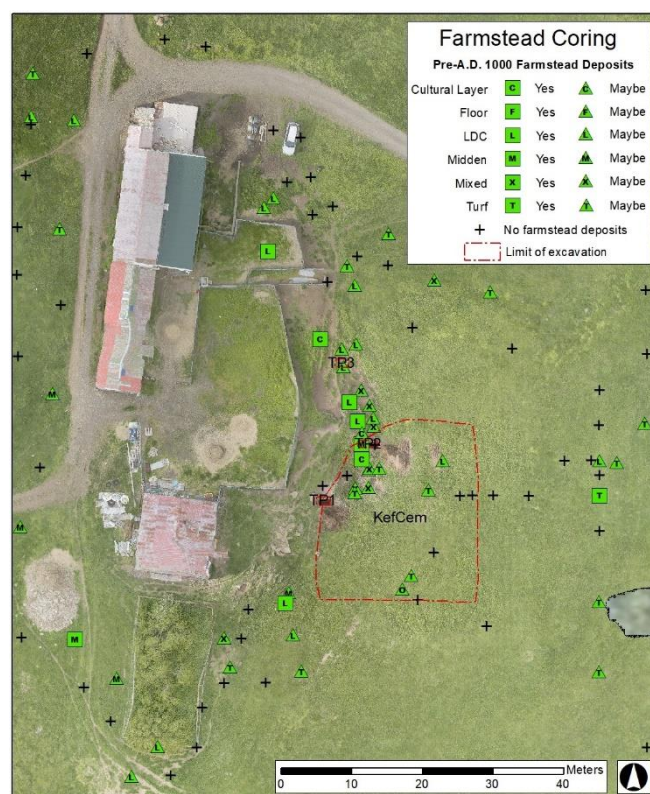


Figure 3. Upper Keflavík, cores with pre-A.D. 1000 farmstead deposits.

Smithy

A small turf structure was revealed just west of the cemetery. It extended under the cemetery enclosure wall [106] and cemetery entrance [129]. The structure appeared immediately under the cemetery layers. The small area between the west of the cemetery and the limit of excavation at the edge of the farm mound was cleaned to help resolve the basic structure of the building and its relationship to the cemetery. A small turf building was partially exposed and was tentatively

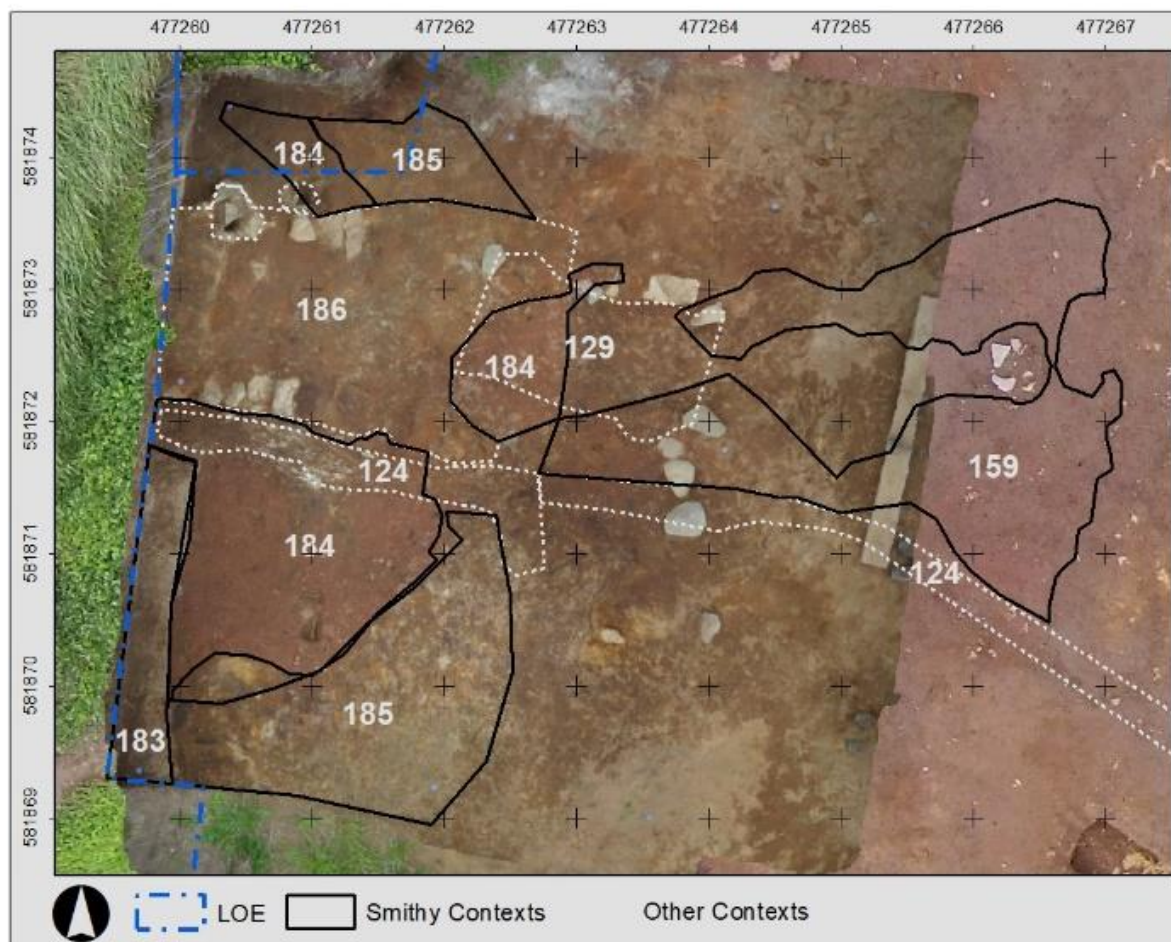


Figure 4. Smithy contexts.

interpreted as a smithy (Figure 4). The overall extent and structure of the building is unknown as the western and northern end continued under the main farm mound. The northern half of the deposit was also partially covered by a raised walkway [186] into the cemetery (see below), which was not removed during excavation. Nonetheless, some of the layout could be identified.

A layer of collapsed turf [183] covered the building west of the cemetery enclosure wall. This layer tapered from about 30cm at the western limit of excavation to nearly nothing at and under the cemetery wall. One of the structure's walls [185] went under the cemetery enclosure. Both the wall and collapsed turf fill must have been partially removed, otherwise the turf collapse and wall foundation should have been thicker. This removal was most likely done in preparation for the construction of the cemetery. The western most 50

centimeters along the limit of excavation was left intact preserving a shallow section of the collapsed turf deposit. The turf layers were relatively flat and suggest that the building may have been deliberately levelled at some point.

One turf wall [185] of the smithy was identified marking the southern and eastern extent of the building. The wall gently curves from the south to the north without a clear corner making it difficult to discern the overall orientation of the structure. The turf in the wall [185] is similar to the collapsed/levelled turf [183] and ranged from light to dark brown with dark orange mottles that may be partially burnt turf. The wall is disrupted in the east, possibly where an entrance to the building was located, but this section was located under the water channel [124] and cemetery entrance [129] and was the most damaged by the later activity so no exact break in

the wall or limit to the entrance could be mapped. The wall continued to the north to the limit of excavation.

The floor of the structure [184] consists of firmly compacted dark red ash and black charcoal with light orange and yellow mottles. Small pieces of charcoal are flattened into the surface. A few ferrous fragments were recovered from the floor with a magnet along with some small pieces of slag that were collected from the surface of the deposit (Sample #209). The smithy floor was partially covered by the raised walkway leading to the cemetery entrance [186]. The floor has also been partially truncated by the drainage channel [124] that runs immediately to the south of the walkway. Three main areas of floor were identified, all similar and presumably belong to the same floor: the largest section south of the walkway, a small patch east of the walkway and under the cemetery entrance [129], and another small patch to the north of the walkway. The small patch to the east is located between two sections of the turf wall [185] and likely corresponds to an entrance in the building.

The patch of floor in the likely entrance to the smithy continues as a thin spread of red ash extended away from the entrance to the building and into the cemetery forming an expanding cone toward the church [159]. The red ash is less than 1 mm thick in most places and is patchy in the line running from the cemetery entrance [129] (the same location as the smithy entrance) to the front of the church where later foot traffic appears to have worn through the layer. The thin red ash lens probably resulted from tracking or windblown ash coming from the smithy.

Rock pit

A large roundish cut [197] was in the southeastern part of the cemetery (Figure 5). The cut probably pre-dated the use of the cemetery as it partly lay under the cemetery wall [106]. It may however also have been a part of the original establishment sequence. Graves number 38, 44 and 49 had been cut into this feature. The cut was 3m long from north to south but 2.7m from west to east. It was around 50cm deep. The fill [200] in the pit was loose mixed natural soil, backfill from the cut. There was no evidence of cultural material within



Figure 5. Cut [198] on the surface. The cuts of graves 38 and 44 can be seen cutting the northwestern corner of the cut.

the pit. The pit had been cut down to glacial gravel and stones of various sizes placed in the bottom. There were no animal bones or cultural material and the stones did not appear to have been placed in any alignment or intentional formation. In the north-western part of this pit was a large stone and a shallow pit [198] filled with smaller stones [198] next to it. The one find within the large pit [198] was piece of worked whalebone that lay among the stones in the smaller pit [198]. There was no charcoal and ash in the smaller pit or anything to indicate its purpose.

The Cemetery

The layout of the Keflavík cemetery is like other early Christian household cemeteries in Skagafjörður. The primary elements include a circular wall enclosing the cemetery and a central church. The cemetery is located on the east side of the farm mound. An entrance on the west side of the cemetery likely faced the main dwelling structure but this area of currently buried under the main farm mound. The cemetery was constructed on a gentle slope that falls from west to east by 2m. There is no current evidence of major landscape modifications to level the surface prior to construction. The timber-built church with turf cladding was situated in the middle of the cemetery. The external dimensions are approximately 6x8m.

For the most part, the cemetery was well-preserved with only limited disturbance and later intrusive cuts. There was, however, a large cesspit [102] cut into the northwestern section of the cemetery. The pit was dug

in early 20th century and later cleaned out and filled with rubbish sometime in the 1960s [108]. The upper half of the fill was removed by machine during the site opening but the lower section, which was cut through preserved layers of the cemetery, was removed by hand. Material was not systematically sieved or collected from the pit. The pit was cut entirely through the stratigraphic horizons associated with the cemetery and into sterile, prehistorical soils. There are graves a short distance to the east of the cesspit cut but there are no grave cuts in the profile of the cesspit cut and there is nothing to suggest that any graves were ever located within the area of the cut. The digging of the cesspit completely truncated a section of the cemetery enclosure wall and extended a couple of meters outside the churchyard. The profile exposed by the cesspit cut revealed a number of tephra layers and their stratigraphic relationship to the cemetery. The cemetery enclosure wall is later than the Vj~1000 layer. A layer of ash and charcoal midden deposit included the Vj~1000 and ~950 tephra layers but ended above the 877±1 *landnám* tephra. The ash and charcoal are mostly likely associated with the smithy, which is immediately to the southwest of the cesspit.

The cemetery is largely defined by burials (see below) but there are additional features of the cemetery space. The two main features are deliberate layers of turf fill that were added to the cemetery surface and a channel cut through the south side of the cemetery to control or direct the drainage of water through the cemetery.

The Hekla 1104 tephra layer was remarkably well preserved in the cemetery. The in situ layer clearly outlines the inside and outside of the cemetery

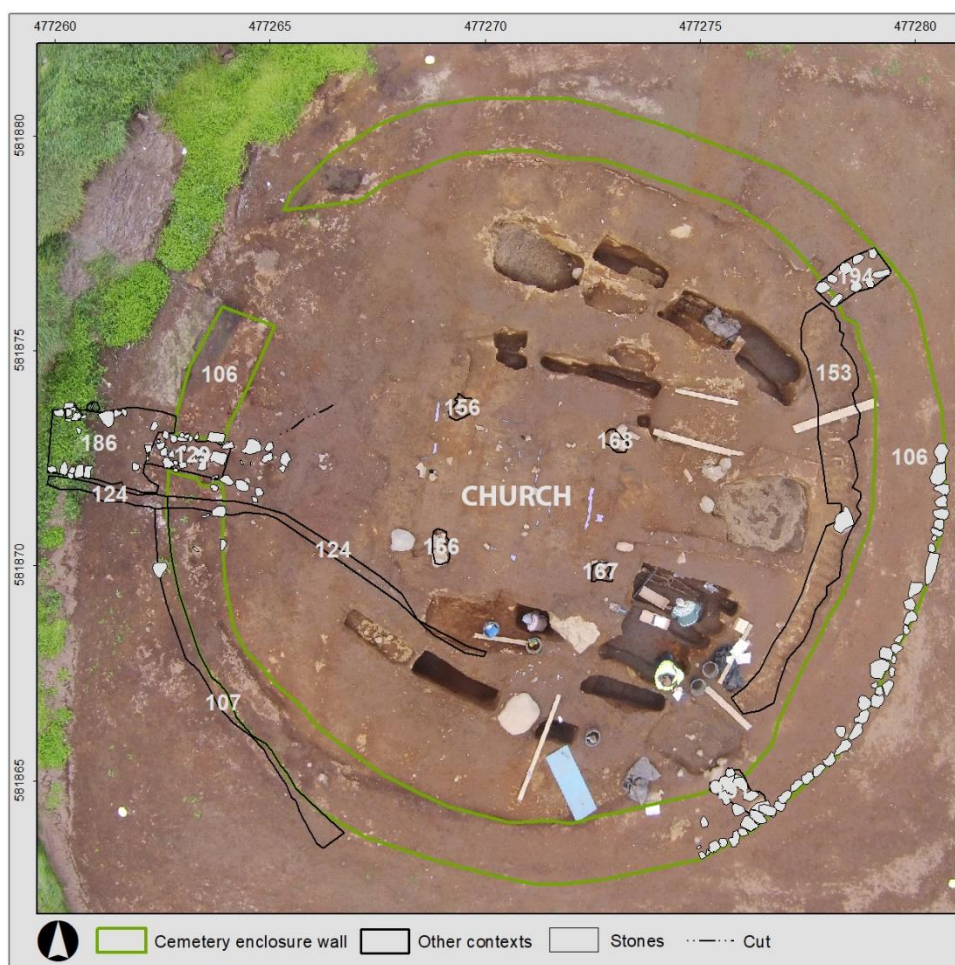


Figure 6. Architecture and features associated the original layout and design of the cemetery.

enclosure walls and covered the entire space up to the edges the church in near continuous sheet. The preservation of the in situ layer is due to a layer of turf fill [110] that was added to the cemetery shortly after the eruption, which effectively capped the layer. The preserved 1104 tephra shows a largely flat cemetery surface with some dips, mostly associated with the drainage channel [124] in the south and graves in the north that appear to have settled after they were filled.

Turf fill layers are common in early Christian cemeteries in Skagafjörður. The post-1104 turf fill layer [110] covered the entirety of the cemetery. It varied in thickness from a few centimeters up to about 20cm were it filled in dips in the old cemetery surface. It was thickest immediately north and south of the church. The fill consisted of mixed dark red and blackish-brown *mýrartorf*. The fine and mixed texture and mottling of the turf indicates that the material was not deposited as coherent turf blocks and the absence of any white

Hekla 1104 tephra in the turf in the fill suggest that the turf came from some already standing structure that was built before 1104.

Cemetery layout

The cemetery and church have many features that indicate that it was deliberately and carefully laid out and oriented in the landscape. The range of features suggest a complex integration of material practices and symbolism that are embedded in the architecture and design of the cemetery: the church defined by the four original postholes [156], [166], [167], and [169]; the cemetery enclosure wall [106] and features of the wall including two apparent drains [191] and [194] in the eastern half of the wall, a distinct stone in the buttressing foundation also on the eastern side of the wall, the placement of the cemetery entrance [129] and the walkway leading to the entrance [186]; the arc of shallow, radial scrapes in the subsoil inside the enclosure [153] all on the east side of the cemetery; and finally a shallow channel [124] that runs from outside the cemetery on the west under the cemetery wall just south of the entrance and then across the southern half of the cemetery in the direction of the southern drain [191] in the enclosure wall. There are traces of a similar cut paralleling [124] to the north that may have connected to the otherwise non-functional northern drain [194]. However, the feature was indistinct and could not be traced to any extent across the cemetery (Figure 6).

Cemetery enclosure wall [106] and drains [191 and 194]

Like most early Christian cemeteries in Iceland, the Keflavík cemetery was enclosed by a circular wall. The cemetery enclosure wall was constructed of turf and nearly circular. The wall averages around 1.3m in width (with a range of about 1.2 to 1.7m based on the preserved section) and measures approximately 15m in interior and 18m in exterior diameters. For most of its circumference it was constructed of turf on soil but a single course of stones lines the outside of the southeastern quadrant of the wall (Figure 7). The stone foundation runs as a continuous line of large stones from just south of the southern drain [191] to just north



Figure 7. Looking toward the south. The repaired section of the wall [200] is visible as white strips of H1104 is visible in the turf blocks.

of grid east. The stone foundation is not symmetrical with regard to the main orientation of the church but an unusually large and flat stone does mark the center point for the two drains and the primary orientation of the church indicating that the foundation was incorporated into the initial conceptual layout of the cemetery.

The foundation may be more practical than symbolic as it roughly spans the lowest spot in the natural landscape where the wall may have benefited from additional buttressing. The only repair or rebuilding of the wall could be found next to the stone foundation (Figure 8). A part of the exterior turf wall had been cut [190] away and repaired with turf [200] containing the 1104 tephra. This was the only evidence for the wall being repaired post-1104. The repaired section was 4.7m long and 80cm wide. On the outside of the wall the 1104 tephra had fallen against the layer of stones suggesting they were visible when the tephra fell. The wall was constructed before the Hekla 1104 eruption; the tephra collected against both the inside and outside of the wall neatly outlining its circumference in white (Figure 1).



Figure 8. Stone foundation along the eastern edge of the cemetery. The white 1104 tephra has fallen against the stones suggesting they were visible when the tephra fell.

Large sections of the enclosure wall were almost entirely removed post-1104. On the north and east sides of the cemetery, the wall remains consist of little more than a few, thin patches of turf block and the outline created when the white 1104 tephra fell against the, then standing, walls. The best preserved section of wall is around the cemetery entrance in the west and the southwest quadrant. This is also the section most heavily damaged by later pitting. Here the wall is preserved in section about 20cm high. From the thin remains of the wall it appears to have been constructed from *hnaus* blocks on the exterior and interior faces with a fill of mixed turf. There is little evidence of significant wall fall or slumping suggesting that the upper layers of the wall were deliberately removed, probably as part of the general closure of the cemetery, and either taken to another location or spread out.

A stone lined drainage channel or gutter [191] extended through the southeastern cemetery wall [106] (Figure 9). The channel was 1.4m long and oriented northwest-southeast. It consisted of two parallel lines of stones extending through the width of the cemetery wall. The channel may have been about 10cm high. Large flat stones had been placed as slabs at the entrance and exit of the channel, but otherwise the roof of the channel had been made with timber, and some timber remains were found and sampled. The wood seemed to be partially charred – perhaps a protection against rotting.



Figure 9. Water channel [191] in the north eastern corner of the cemetery. Cuts for graves 40 and 49 are visible in the background.



Figure 10. Possible drain through the northeastern cemetery wall. It was not cut into the soil like the other water drain [191] and there was no evidence of water ever running through it.

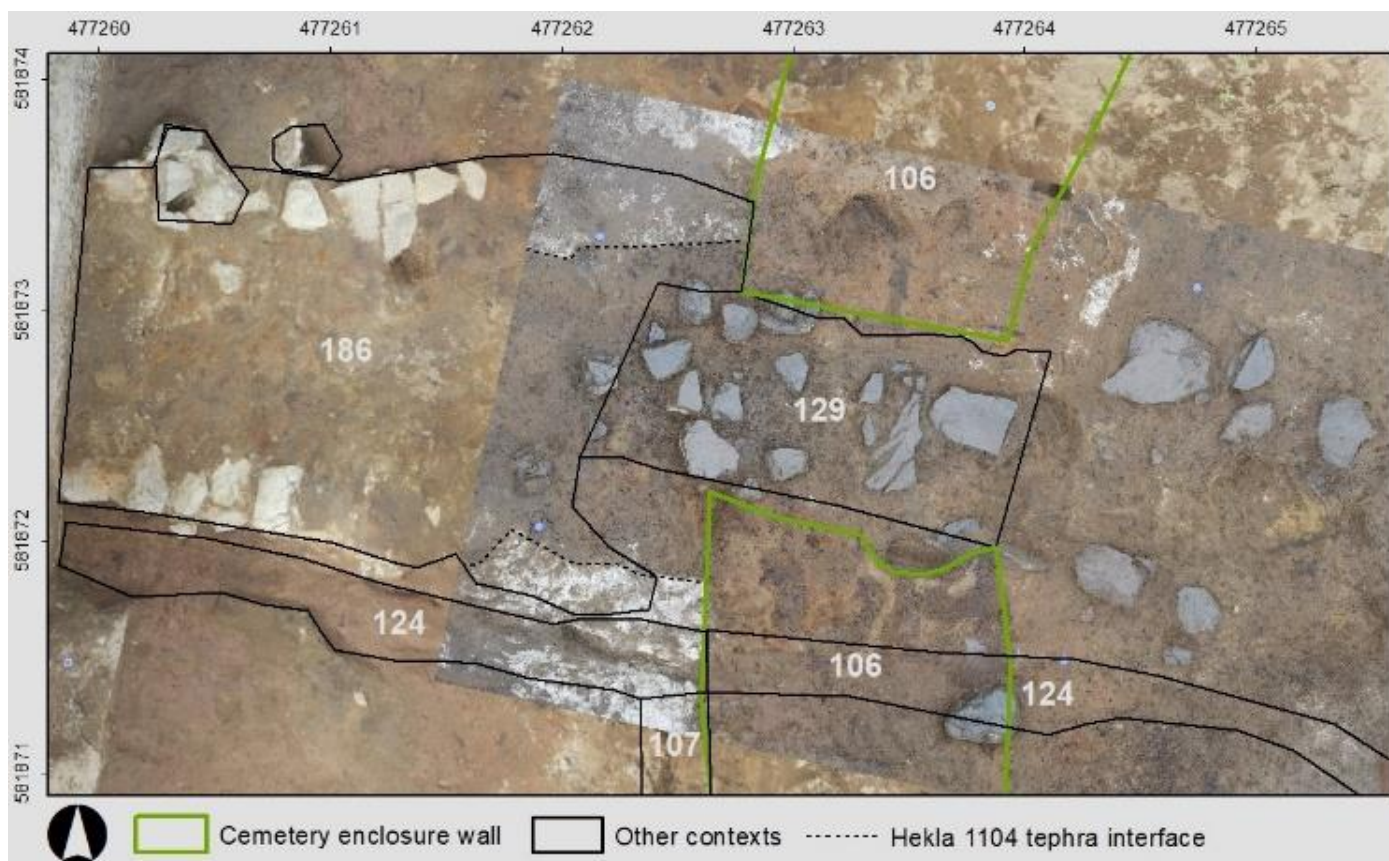


Figure 11. Cemetery entrance [129] and walkway [186] shown in overlapping photogrammetry orthophotos from 7 August 2015 ([129], right) and 4 July 2017 ([186], left). The Interface line with the white Hekla 1104 tephra shows the likely original extent of the slightly elevated turf and stone walkway west of the cemetery entrance. Subsequent flattening is visible in the context boundary.

The stone and wood construction had then been covered by the turf of the cemetery wall. The gutter had not been cut into the ground, but surface water had carved out a shallow channel with irregular borders. The channel contained silty soil, and a few animal bones.

A second stone-lined gutter, possibly for drainage, was situated underneath the northeastern section of the cemetery wall [106] (Figure). The gutter was about 20cm wide and 1.0m long, oriented southwest-northeast. It consisted of two parallel lines of stones extending through the width of the cemetery wall. The channel or gutter had not been dug down however and there was no evidence of water having run through it in contrast to the other gutter [191] in the southeastern corner, which was more obviously constructed to channel runoff water from the cemetery. There was no evidence of stone slabs or timber roof either.

Cemetery Entrance [129] and pathway [186]

The cemetery entrance [129] is located at the western most side of the cemetery enclosure. The entrance is connected to a raised walkway of turf and stone [186], which runs from the entrance to the west outside of the cemetery into farm mound at the western limit of excavation (Figure 11). The commonly observed proximity between early Christian household cemeteries and domestic structures in Iceland suggests that the walkway may lead to the 11th century farmhouse buried under the farm mound, which would more or less correspond to the same location as the early modern turf house at the top of the mound. However, no direct evidence of a domestic structure (or any additional 11th-century building) was observed within the area of excavation.

While the entrance and walkway generally line up with the western entrance to the church they are not exactly in line: the entrance actually points at the southwestern

corner of the church and someone walking from the entrance to the church would have to proceed due east from the entrance to arrive at the church door. The entrance was stone paved and a few stones were placed immediately next to or in the turf wall. The stones would have reinforced the wall but also would have resulted in a neatly finished look. It is unclear if the stone pavement extended past the edge of the wall into the interior of the churchyard. There are flat stones to the north and south that could represent a continued pavement but the middle, the immediate extension of the entrance, is lacking stones. These could have been removed by the later intrusive pit [112].



Figure 12. Walkway to cemetery [186], outside of cemetery looking to the west into the main farm mound.

Outside of the cemetery there is a low, raised platform of turf and stone [186] that leads directly to the cemetery entrance, which is interpreted as a walkway possibly connecting the domestic house with the cemetery (Figure 12). The walkway was exposed but not removed during excavation. It measured about 1.5m in width and 2.8m in length within the limit of excavation. The western portion was best-preserved and consisted of a single course of stones laid along the south and north edges with turf blocks in the middle. There are two possible postholes on the north side of the feature. One is built into the single course of stones while the other is offset just to the north of the stones (Figure 13). There are no matching postholes on the south side of the walkway and they may be associated with a later structure in the area.



Figure 13. Possible postholes on the north side of walkway [186].

The entrance and walkway appear to have been part of the original pre-1104 construction of the enclosure wall. The white Hekla 1104 tephra was well-preserved on either side of the walkway. Only thin wisps of tephra were found on top of the walkway where they appeared to have been compressed on and into the turf blocks. The absence of any in situ Hekla 1104 tephra in the entrance or on the walkway indicates that they were in use after 1104 and were not part of the general turf fill event that preserved the tephra throughout the rest of the cemetery.

Channels [124] and [107]

A shallow channel [124] appears to run from west to east across the entire cemetery. A branch of the channel [107] flows outside the southwest side of cemetery. The channels were initially interpreted as aiding in the practical control of water flow and drainage around and within the cemetery. The western side of the cemetery faces uphill and water would have run down from outside the cemetery enclosure to collect against the wall or into the cemetery where it would have pooled against the western gabled end of the church.

Following the excavation in 2017, the simple explanation of practical water is less tenable. Excavation to the west of the cemetery revealed the channel extended outside of the cemetery and that instead of channeling unwanted water away from the

cemetery and church, the channel was designed to bring water to and through the cemetery.

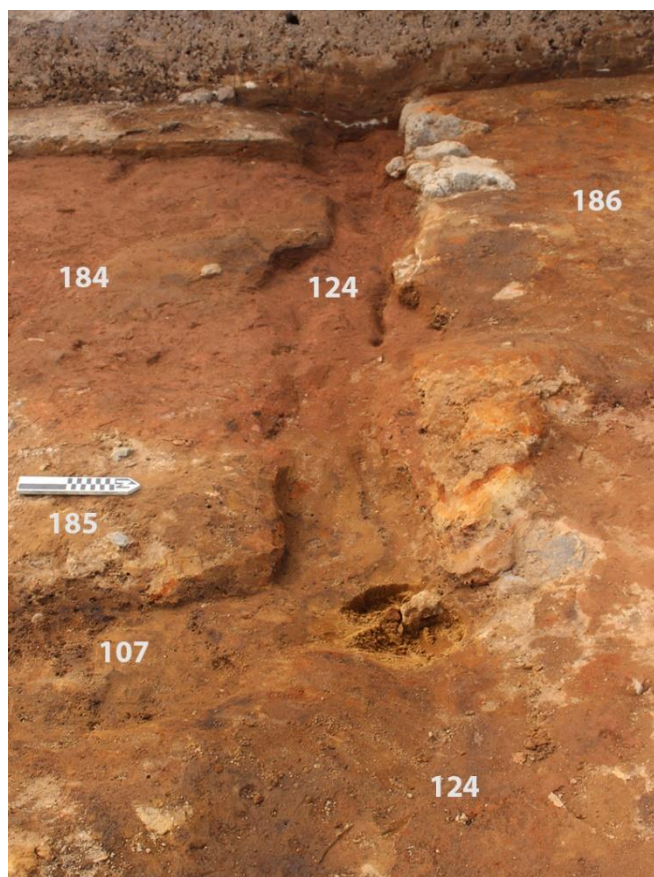


Figure 14. Context 124, a water channel, in west, outside of cemetery looking to the west.

The channel begins outside the cemetery west of the entrance where it runs immediately parallel to the raised walkway [186] that leads to the cemetery entrance (Figure 14). It was partially cut into but not through the peat ash floor of the smithy [184] and distinct spade marks can be seen on the north and south sides of the feature. The channel is relatively shallow, approximately 5-10cm deep and 20-30cm wide. The channel continues to the west of the limit of excavation under the farm mound. Assuming that the walkway leads to a domestic structure, the channel would appear to come from that building as well. It is not clear where the water that ran in the channel would have originated and it seems most likely that the channel either brought water to this location or collected runoff from some structure rather than that it functioned to gather or control natural runoff from the hillside.

The channel bifurcates outside the cemetery enclosure wall, one branch of the channel continues into the cemetery through the enclosure wall. The other channel [107] traces the outside of the southwest part of the cemetery enclosure wall where it runs closely following the curving wall to the south and east. At the southernmost extent of the cemetery enclosure the channel ceases to follow the wall and instead runs directly east down slope where it gradually fans out and disappears. The splitting point of the two channels [107] and [124] is approximately 90 degrees. Excavation revealed a small circular area of soft fill approximately 20cm in diameter containing a couple of small cobbles at the juncture. This feature was initially interpreted as a posthole or the pivot point of a wooden gate intended to direct the flow of water either into the cemetery or outside the cemetery enclosure wall. While this interpretation is possible, no distinct cut was identified and it seems more likely that the soft fill developed as a result of water collecting in this location. Nonetheless, it does seem likely that there was some feature – possibly a simple wooden panel – that directed water either into or around the cemetery.

The continuation of the channel into the cemetery runs under – or possibly through a break in – the cemetery enclosure wall just south of the cemetery entrance [129]. No structure was found that would have supported the turf wall over the channel but there were intact turf blocks filling the approximately 30cm gap between the clearly defined channel and the stone pavement and edges of the entrance. The turf in the enclosure wall immediately south of the channel was severely damaged by post-1104 intrusive pitting, burning, and possibly moisture associated with channel or the collection of water against the uphill side of the wall after the closure of the cemetery. While the channel cut is clear, its articulation with the wall is not.



Figure 15. Context 124 inside the cemetery looking to the west.

The section of channel in the cemetery is wider and shallower than the section outside the cemetery (about 25cm centimeters in width and only about 10cm deep). The smoothly rounded bottom of the channel indicates a low-energy water flow and that it may have been covered with grass or other vegetation as exposed soil would have almost certainly eroded into a more deeply cut water course.

The channel initially appeared as a linear break in the white Hekla 1104 tephra layer. Upon investigation it was clear that tephra actually dips following the shallow contour of the channel (Figure 15). Some aeolian fill between the bottom of the channel cut and the tephra indicate that it had partially filled before A.D. 1104.

The channel flows from the cemetery entrance past the south side of the church in the general direction of the south drain [191] in the southeast side of the cemetery enclosure wall. It is assumed that the drain was the original terminus of the channel but the channel could not be traced past the middle of the church where it disappears in a dense cluster of graves. Assuming that the channel originally did extent across the entire cemetery from entrance to drain means that it predated the graves and apparently was no longer in use when the graves were cut.

The channel appears to be part of the initial layout and construction of the cemetery. It follows the pathway

that leads to the cemetery and is closely associated with the cemetery entrance. There is no evidence that it was cut in later. The channel was already partially filled in when the Hekla 1104 tephra fell. However, the shallow channel had a deeper incised channel at its based around 5cm wide. The deeper section appears to have been excavated by water coursing in the channel rather than deliberate construction and was active after the 1104 tephra fell. That the channel did not need to be maintained reinforces its association with the original layout of the cemetery and largely symbolic purpose.

The discovery of the two stone drains in the east side [191 and 194] of the cemetery enclosure wall and the apparent connection between the channel and the southern drain raised the question of whether a similar channel ran on the north side of the cemetery to the other drain. Overall, there does not appear to have been a mirrored channel on the north side of the cemetery. The cemetery wall is not well-preserved north of the entrance but there is no evidence for a channel nor was a distinct channel found in the interior of the cemetery on the north side. Also, the north drain in cemetery enclosure wall [194] does not appear to have been functional and consists of little more than two parallel lines of stones that would not have allowed for the flow of water under or through the wall. There is, however, a faint cut on the north side of the red ash layer west of the church [159] that closely mirrors the line of the channel to the south (Figure 16). The area with the possible mirroring cut or channel was damaged by small intrusive pitting in and inside of the cemetery enclosure wall and the large cut associated with the 20th-century cesspool and later midden fill [102]. While the feature does closely mirror the channel, no clear cut was ever identified and the Hekla 1104 tephra was less consistent in its cover. To the extent that it is possible to tell, the break in the north side of the red ash appears to run in the direction of the entrance to the smithy and may represent the abrasion and wear of repeated traffic in and out of the structure rather than a later cut in the ash layer associated with the cemetery. With the limited information, it is equally plausible that any northern channel, like the northern drain [194], was



Figure 16. Red ash layer [159] looking west to the cemetery entrance [129]. Channel [124] is visible to the left. A mirror break in [159] is visible to the north.

minimally constructed and has not been preserved well enough to be identified.

Context 153, radial depressions in subsoil

One of the more enigmatic features of the cemetery is the radial depressions in the subsoil [153] that trace the eastern interior of the cemetery enclosure wall (Figure 17). The feature serves no obvious function but its highly deliberate and symmetrical nature indicates that it played a role in the original layout and alignment of the cemetery. The arc formed by the feature is about 30cm inside of and conforms to the curve of the cemetery wall. It runs from just south of the north drain under [194] under the cemetery enclosure wall to approximately 1m north of the south drain [191].

The radial depressions or cuts lay under the turf fill layer [121] and go into the natural soil. It is not entirely clear how the depressions were produced. Individual marks range from about 20-60cm in length and about 15cm in width. They are straight along their length and curved in cross section. The size and shape is consistent with the scraping of a curved spade but they could also have been produced from a cylindrical object being pressed into the soft subsoil. Scraping with a spade seems the more likely of the two.

The depressions center on a natural rock which pokes up out of the subsoil. Eighteen individual marks could be traced on both sides, north and south, of the central

rock for a total of 36 marks. The full feature covers about 10m. While the specific purpose or symbolic association of the feature remains obscure, the early stratigraphic context, positioning, symmetrical structure, and radial nature of the marks clearly indicate that the feature was carefully laid out and that it appears to be associated with one of the two easterly orientations that are embedded in the cemetery.



Figure 17. Context 153 with central rock, looking south.

Cemetery fill layers

Turf fill layers are common in early Christian cemeteries in Skagafjörður (Zoëga, 2014). They served the purpose of both leveling the ground within the cemetery as well as facilitating thicker soil for burial. A post-1104 turf layer [110] covered the entirety of the cemetery and was removed in the 2015 season.

This layer [110] contained large blocks of turf with thick lenses of the 1104 tephra and extended over the entire surface of the cemetery. The layer is more likely to represent the closure of the site as opposed to being a landscaping feature. Underneath that [110] layer was another mottled turf layer [109] with flecks of 1104, extended over the northeast part of the cemetery filling up various shallows. Only one grave [grave 3] cut through the [109] layer

In 2016, a mottled turf fill layer [121], which covered the eastern part of the cemetery, was mapped. The turf layer lay immediately under the 1104 tephra and was formed of reddish mottled turf. It became obvious that the layer had not been deposited when the cemetery was established as it covered a number of the earliest graves in the cemetery located to the east of the church. Some graves were excavated through this layer and are later. Underneath the [121] layer in the south-eastern corner of the cemetery was a dense gravel layer [145] that seems to have been deposited to level out a dip in the landscape before the deposition of [121] turf layer. The [121] turf layer may be associated with a rebuilding episode of the church. The layer contained a lot of burned wood and some burnt turf which indicates that it came from a turf structure that had burned. Whether that was the church or other building is uncertain but there was no evidence of a burning episode in the church remains themselves. An interesting feature of this layer [121] is the fact that animal bones seem to have been deliberately deposited at the interface between natural surface soil and the bottom of the turf. What the purpose of this may have been is uncertain, perhaps it served to bind the loose turf to the natural surface. The layer was up to 20cm thick in the eastern section of the cemetery and seems to have been used to level the ground within the

cemetery which lay on a gentle slope. It mostly covered the eastern section at the bottom of the slope where it was thickest, but thinned out to the western part of the cemetery that lay higher up on the slope.

The Church

The church is in the approximate center of the churchyard. The earliest phase of the church appears to have been a rectangular wooden structure with sunken posts and a small choir on the east end. There were turf walls on the north and south sides of the structure. The room was rectangular with interior dimensions of approximately 4.7 x 3.5 meters (west-east by south-north) with a small choir extension measuring approximately 2.3 x 2.1. The structure was slightly expanded after 1104.

A large foundation stone in the approximate middle of the north wall and a similarly located indent in the foundation cut on the south wall suggest that the north and south walls were constructed in two sections or *stafgólf*, each about 1.85m in length. Little of the wooden structure has survived but there are remnants of corner posts as well as fragments of sill, floor joists, and floor boards that indicate that the construction included an interior wooden floor. Details on the construction and sequence of expansions and repairs are discussed below.

The church is oriented to the south of east. This alignment is replicated in other features in the cemetery such as the entrance in the enclosure wall and many of the graves. Based on this alignment the cemetery appears to be oriented toward Gljúfurárdalur in Blönduhlíð on the eastside of Skagafjörður (Figure 18).

Church phases

The church appears to have been built during the initial establishment of the cemetery. A small choir on the east end of the church was mostly likely part of the original construction but the stratigraphy is not entirely clear. The area around the choir was heavily damaged by the ploughed cable line and electrical junction trench excavated by RARIK in 2013 so it is difficult to discern the stratigraphic relationships between the choir and

the surrounding area with perfect certainty. The north turf wall was repaired sometime before A.D. 1104. After 1104, the west gable end of the church was rebuilt and expanded. This renovation included the partial re-excavation of the church foundation and the construction of a new wooden floor inside the church.

Initial church construction

The turf within the church, and possibly the enclosed cemetery as a whole, appears to have been stripped prior to construction. Mottled patterns of mixed soil and yellow Hekla 3 tephra under the inside of the church [176] and the church walls indicate some sort of surface disruption associated with the site preparation. The initial construction sequence is somewhat complicated by later alterations but the general outline is clear.

Small pieces of timber were found throughout the interior of the church. Most of the wood appears to be the remains of in situ structure: corner posts, sill beams, floor joists, and one piece of planking in the eastern side

of the church that is likely a piece of a wooden floor. Pieces of the wooden sills were recovered from all around the structure: the north and south interior walls, from the choir, and from the gable end of the church. Most of these were small and fragmentary. None preserved clear evidence of how the wood was worked or how the structure was assembled. For example, although some pieces were situated and aligned as sills, they were not well enough preserved to see how the wooden walls were attached to the sills. It is also unclear from the fragmentary remains how the sills were joined to the corner posts. While the corner posts were sunken in the ground, small stones placed along the interior of the turf walls indicate that the sills were elevated off the ground. These foundation stones are more frequent on the north side of the church but there are clear stone placements approximately halfway along the north and south walls that would have supported the sill timbers. There also appears to have been a small gap between the timber structure and the turf walls.



Figure 18. View from the west side of the church facing east. Arrows show the eastern orientation of the church and the location of Gljúfurárdalur in Blönðuhlíð.

Fragments of the wooden floor joists, as well as linear depressions corresponding to the location of degraded joists [177], were found at the bottom of the church. The wooden fragments and depressions from the floor joists show two different floor patterns inside the church. It is not clear if this is part of the original design of the church or represents a partial repair of the western part of the church. There appear to be two distinct foundation cuts within the church: a very shallow cut [176] that corresponds to the interior space defined by the corner posts and a slightly deeper cut in the western 2/3 of the church [163]. The outlines of the

deeper cut [163] conform closely to the interior space of the church and appears to be part of an intentional foundation excavation to prepare or possibly repair the interior of the church. The absence of this deeper cut from the eastern third of the church indicates that the wooden floor in these areas may have been slightly elevated relative to the rest of the church or that the western part of the church floor was removed, the subsurface re-prepared, and a new floor constructed. This possible sequence is discussed in further detail below.

Posthole [155]



Posthole [168]



Posthole [166]



Posthole [167]



Posthole Overview



Posthole [187]

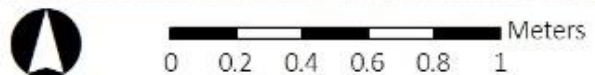


Figure 19. Church postholes: (a) during excavation with stone placements partially in place, and (b) fully excavated.

Postholes

Following the initial site preparation, the corner posts of the church appear to have been the first step in the construction of the church. The four postholes were a similar oblong shape measuring roughly 60 x 35 cm: in the northwest [155], in the southwest [166], in the southeast [167], and in the northeast [168]. These large holes were fairly shallow and were packed with earth and dirt around a slightly smaller and deeper hole (Figure 19). The posts were set at close to the same elevation across the church with the western posthole cuts, the uphill side of the cemetery, about 15cm higher than the eastern postholes. The posthole cuts averaged about 30cm deep, with a range of 21-33cm. Post-sized impressions were found at the bottom of the two southern postholes indicating that the wooden posts were set in dugout bottom of the holes and then packed with earth and stones rather than being set on the stones. These impressions corresponded with small gaps in the stone packings showing how stones were used to wedge the post timbers. This is particularly evident in the northeast posthole [168] where a section of post timber survived. In the case of [155/156] the deeper section around the post [155] may represent a separate cut or possible resetting of the post. These smaller postholes were also packed with earth and small stones.

The postholes in the northwest [155], northeast [168], and southwest [166] corners of the church all had vertically oriented preserved wood, possibly pieces of the original posts. The posthole in the southeast [167] corner lacked any remaining wooden timber but the size and depth is similar to the other postholes. Where fragments of wooden posts remained, they were embedded in the deepest part of the posthole and were immediately braced by stones on one or two sides. The post fragment in the northeast corner was the best preserved. It appeared to be square cut and the section that remained was about 10cm wide (Figure 20). A post width of a bit over 10 cm is consonant with the gap in the stone packing and deepest part of the posthole in the well preserved southwest corner of the church.



Figure 20. Wooden post in posthole [168] (S# 136).

There is one posthole associated with the southeast corner of the choir [187]. A matching posthole at the northeast corner was likely destroyed when RARIK excavated a trench for an electrical junction [103] in 2013. The south end of the electrical trench overlaps the estimated location of a northeast posthole. A number of large stones that could have been sill foundation or posthole fill were in the south end of the trench but the disturbance was enough that the original placement was unidentifiable. The southeast posthole was filled with mottled reddish-brown turf and soil with H3/H4 tephra. The upper interface of the original posthole cut was unclear, especially on the west side near where the electrical cable was ploughed under. The sides of the original posthole cut are more clear, about 15cm under the surface as defined by one of the large stones in the fill and it seems the southeast choir posthole is largely intact despite the disturbance at the upper interface.

Dating the initial construction of the church

There is no clear evidence to date the initial construction of the church other than that it post-dates

the Vj~1000 tephra and that it was well before the Hekla A.D. 1104 tephra. Small patches of a thin, ashy layer [164] survived under the eastern third of the church floor and the north turf wall [134]. The stratigraphic sequence and association of the ashy lens was difficult to discern within the church. The ash was originally interpreted as possibly having accrued under a wooden floor inside the church but it is now clear that the ash is completely unrelated to, and predates, the church. An intact sequence was revealed when the turf wall was removed on the north side of the church in 2017. There, a thin layer of brown aeolian soil with the Vj~1000 tephra layer [180] was seen under the turf and over the ashy lens, which appeared to be similar to those found within the church. The ash is most likely associated with the smithy a short distance to the west and probably represents an extension of the red ash layer [159] that was identified west of the church.

In 2015 it was evident that both the 11th century and post-1104 phases of the church were constructed of turf and wood. Because the earliest phases of the other known 11th century churches in Skagafjörður were timber structures, it could be expected that there would be an earlier wooden church without turf covering at the site. Excavation in 2016 did reveal a similar wooden structure as found elsewhere, but its walls had obviously had turf cladding from the onset. The three other excavated early 11th century churches in Skagafjörður: Keldudalur, Seyla, and Neðri-Ás, all revealed free-standing wooden structures in their earliest phases (Zoëga 2014, Zoëga et al 2013, Vésteinnsson 2000).

The church at Keflavík had turf cladding walls on the north and south sides from the beginning which suggests that the form and nature of the first churches was not fixed but depended on individual preferences, availability of materials and possibly localized weather patterns (Zoëga 2014). It cannot be ruled out that the church may have been established somewhat later than the nearby cemeteries at Keldudalur and Seyla but the fact that it was after the Vj~1000 tephra fall could place it any time after, or even before, Iceland's official conversion at the Alþing in A.D. 1000. How long after is difficult to ascertain. The coin (F# 2016-40-12) was

found under one of the floor joists, was firmly pressed into the underlying soil. It likely dates to the mid-11th century. It is possible that the coin was deposited when the church was initially constructed but it is much more likely that it was deposited during one of the later alterations and therefore provides no information on the initial construction date for the church or cemetery. As the graves respected the church from the onset, it seems likely that the church and graves were more or less contemporary. The layout of the cemetery and its phasing suggests it was established very early in the 11th century and came out of use in the first one or two decades of the 12th century.

Alterations and repairs to the church

The late 11th-century church survives as a series of turf wall foundations and contact lines where the Hekla 1104 tephra fell against the edge of the turf and wooden walls. Traces of wood were found at the edges of the structure. Turf walls were on the north [134] and south [133] sides of the church. These walls only extended about $\frac{3}{4}$ the total length of the walls and left the western end of the wooden structure exposed. There is no evidence of a turf wall on the western gabled end of the church.

All of the pre-1104 turf is similar. Reddish-brown with brownish-black layers. The turf included small bits of fine blackish tephra (possibly K 860) and gray-greenish tephra possibly the 877±1 *landnám* layer, the as of yet undetermined mid-10th century layer, or the Vj~1000 tephra. Where the turf walls were preserved well enough to discern the construction style, they were made with an outer and inner layer of rectangular *hnaus* blocks with thick layers of *strengur* making up the wall core. The use of *strengur* in the wall cores indicates a relatively high investment in the construction and it is possible that the *hnaus* blocks making up the wall facade were alternated with *strengur* courses.

The interior structure of the church was clearly made of wood. Remnants of a wooden sill were found in the choir, at the western end of the north wall, and along the gabled west end of the church. The turf fill inside the church [113] was not compacted and had limited

evidence of activity. The church interior probably had a wooden floor.

The choir

The church had a small choir on the east end. The interpretation of the choir was complicated by the fact that an electric cable had been ploughed through the middle of it and disrupting evidence of its construction sequence. In 2013, RARIK ploughed cable through the choir before the cemetery had been identified. In 2015 it was interpreted that the choir was a later addition to the church, possibly built at the same time as the [121] fill layer was deposited. In late 2016 it became obvious that solid turf walls could only be established at the northern and southern church walls and that that the turf visible east of the church was a part of the [121] fill layer. This became obvious as the layer was truncated by graves while, at the same time, covering other graves.

The sequence and exact construction style of the choir remains uncertain as it was the least well-preserved part of the church. One sunken posthole [187] was found at the southeast corner of the choir. Remains of a stone foundation and wooden sill fragments were recovered on the north and south sides of the choir near the main body of the church but the eastern half of the choir was largely destroyed by the electrical line. A trench dug by the electrical company to create a junction with a subline further damaged the north end of the choir and most likely destroyed the northeast posthole.

The turf in and around the choir was less distinct than the main church walls. The color and tephra inclusions are similar to the two main north and south turf walls and to the [121] turf fill layer that covered the cemetery. *Hnaus* and *strengur* as well as indistinct turf pieces and fill were found but no distinct walls were ever identified. Perhaps most confusing about the construction of the choir is that the foundations stones appear to have been set into the turf as opposed to under or inside of a turf wall (Figure 21). In the end, our best – if still uncertain – interpretation is that the choir lacked turf walls and that it was probably there from the initial building of the church, given that the graves in the

cemetery pre-dating the [121] layer seem to have been dug on either side of the choir.



Figure 21. Cross section of the church wall in the northeast corner of the choir, exposed by the electrical trench originally dug by RARIK. View to the west.

Pre-1104 repairs

There were two clear phases of post-construction remodeling or repair at the church, one before the fall of the Hekla 1104 tephra and one after. The pre-1104 repair of the church appears to have been limited to the north turf wall. It is unclear if there were any alterations to the interior of the church at this time.

The western end of the north turf wall [134] was partially removed as part of a larger (approximately 1.5 meter across) excavation [154]. The excavation cut into the remaining turf wall foundation to the east. To the south, it ran roughly parallel and outside the line defined by the northwest posthole [155] and sill of the interior wooden wall of the church. On the west, the cut terminates roughly at the edge of the original wooden gable end of the church. The northern edge of the cut was later truncated by two infant graves [17 and 18]. The excavation was relatively shallow, about 10-15 cm in depth with the bottom roughly corresponding to the bottom of the turf wall. The excavation was filled with brown soil [151] and a new turf wall [172] was laid on top of it. A portion of the cut and fill to the west was not covered by the new turf wall and was subsequently covered by the white Hekla 1104 tephra (Figure 22).

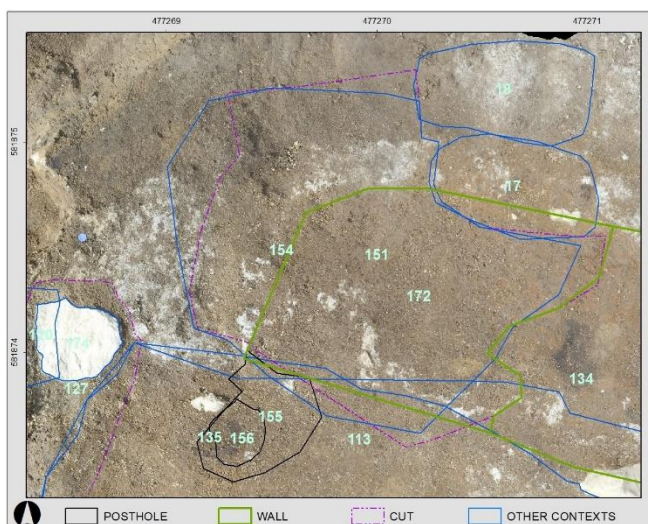


Figure 22. 11th-century repair to the north turf wall.

The post-1104 church reconstruction

The church shows distinct evidence of major renovation after the fall of the Hekla 1104 tephra. Most of the alterations were to the west gable end of the church, which appears to have been entirely replaced and extended to the west. The main visible features of the reconstruction are the edition of new turf to the north and south walls, a reconstruction of the foundation and entrance on the western end of the church, and the expansion and reconstruction of the west end of the church with the addition of new posts set on stone post-pads to the west of the main church posts.

The major repairs or renovation to the church appears to be roughly contemporaneous with the post-1104 turf fill layers [109]/[110], which cover most of the cemetery. Given the relatively short period between the fall of the Hekla A.D. 1104 tephra, turf fill, and subsequent abandonment of the cemetery, it is unclear if the post-1104 renovations to the church are associated with the continued usage of the cemetery or a renewal of the church after, or contemporary to, the closing of the cemetery for burial. However, the fact that the interface of the 1104 tephra is well-preserved under the expanded gable end of the church and that it is entirely intact under the new church entrance (see below) strongly suggests that the period of time between the tephra fall and the renovation was short – presumably, the tephra at the entrance of the church would have been more disturbed if it had been exposed

to regular foot traffic, much as it was in area between the church and the entrance to the west. All in all, it seems most likely that the renovation shortly followed the tephra fall and was part of a more inclusive cemetery renovation that included the addition of new turf fill layers [109]/[110] throughout the cemetery.

Alterations to the church also included the partial removal and reconstruction of the floor inside the church. The sequence of construction and alteration in the interior of the church is ambiguous as there is little tephra inside the church and the stratigraphic relations with the surrounding deposits are largely truncated by late, post-1104 foundation cuts. The stratigraphy is based largely on sequencing the interior foundation cuts and a hypothesized pattern of floor joists for the original church floor and the later reconstruction (Figure 23). The pattern of floor cuts and hypothesized joists fits best with a single event that included the post-1104 reconstruction of the west gable end of the church.

The original church appears to have had a shallow foundation cut [176], which was deepest on the south side of the church. The western 2/3 of the church has a second, deeper foundation cut [163] than the eastern 1/3 of the church. The pattern of floor joist imprints in the floor [177] also does not match well with the evidence for the floor structure in the eastern portion of the church. The repair appears to have been limited to the western 2/3 of the church and along the inside of the north wall where a number of stones and small foundations cuts indicate a new structure was put in place to support the floor.

Very little survives of the original wooden floor joists or surface in the church. Traces of wooden sill were found on all sides of the church and in the choir but it is difficult to ascribe these to either the original church or later repairs. Where floor joist fragments and impressions do survive, they appear to be associated with the post-1104 repair and renovation of the church. However, a possible stone foundation for a wooden joist preserved in the eastern half of the church and structural details of the wall sills and posthole placements suggest that the original church interior



Figure 23. Foundations cuts in the church and hypothesized location of original floor joists for the original church and post-1104 reconstruction.

was about 3.8m in overall length and had three internal joists spanning the floor from north to south with a spacing between joists of roughly 0.9-1.0m. While the evidence for the original flooring system is thin, there is a linear, north-south aligned row of small, flattish stones in the eastern part of the church. These stones are in an area that was not heavily disturbed when the foundation was re-excavated in the western 2/3 of the church [163]. This line of stones is approximately halfway between the eastern sill and the center of the church as defined by a large foundation stone and small foundation cut [179] on the north side of the church, a cut out on the south side of the original foundation trench, and the remains of an upright post fragment on

the south side. A similar joist halfway between the center of the church and the original west sill is almost entirely hypothetical as the area was later excavated any original joist foundation would have been removed. There are small stones on the north and south sill in the approximate location of the hypothesized joist but there are stones all along the north sill so this can only be seen as consonant with the idea of a joist, not as evidence in support of its existence. If this hypothesized system is correct, it would suggest three internal joists: a central joist that divided the church in the middle, matching the division into two *stafgólf*, and two additional floor joists that supported the floor on either side of the central joist.

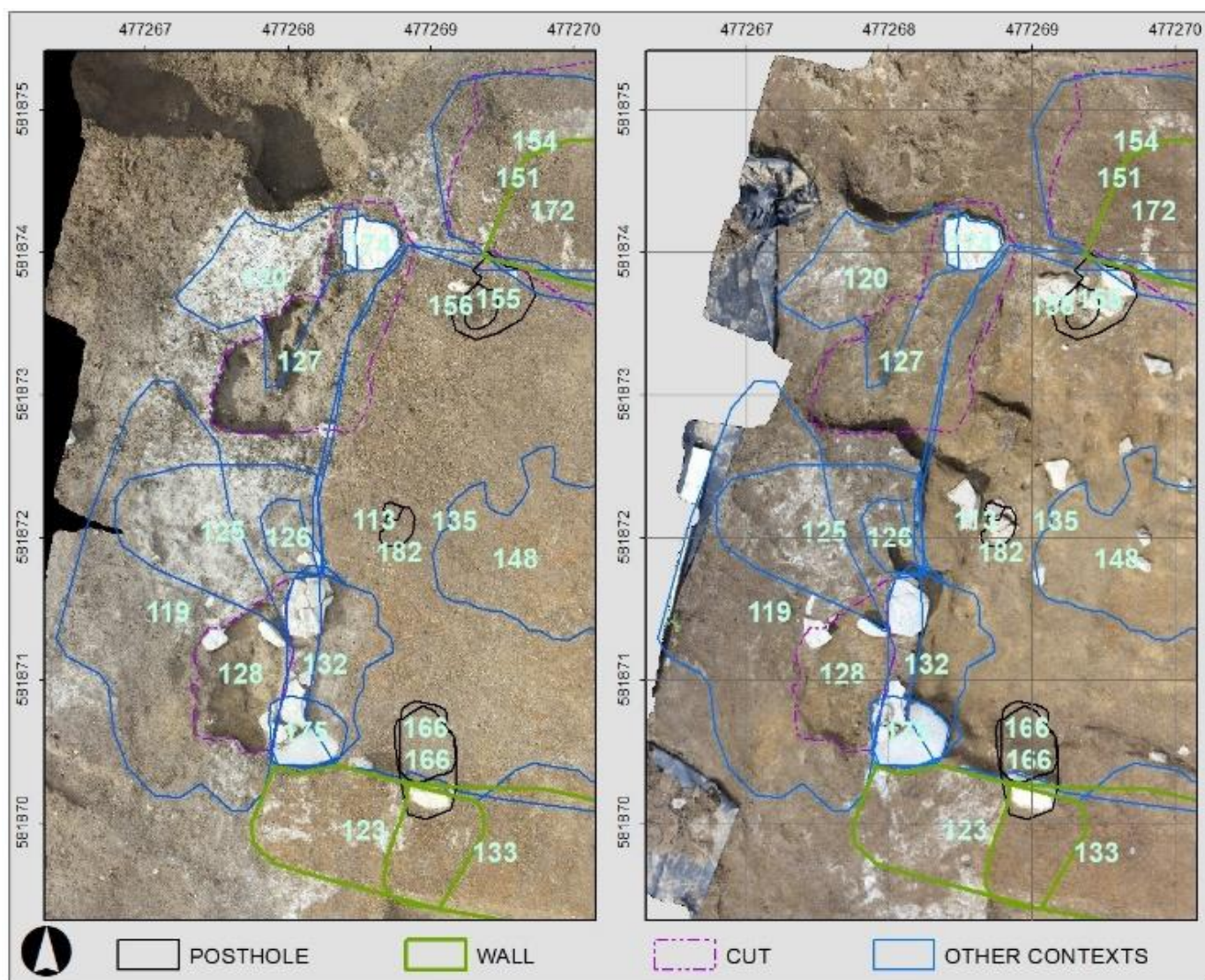


Figure 24. West gable end of the church. Left image overlain on photogrammetry generated orthophoto from 11 August 2015. Right overlain on photogrammetry generated orthophoto from 9 July 2016 showing exposed foundation cuts.

More evidence exists for the post-1104 floor system. What appear to be the remains of in situ floor joists were recovered just inside the east wall and slightly to the east of the middle of the original church. A distinct linear impression was also found in the bottom of the later foundation trench [163]. A single clear impression of an east-west oriented joist spanning the area between the new middle and west joist was also seen. This is the same joist under which a coin found (F# 2016-40-12). The coin most likely dates to the mid-11th century and could easily fit with a depositional date in the early 12th century. The coin may be a foundation deposit associated with the repair of the church (see below).

The post-1104 floor probably had a similar pattern to the original floor, with three main internal joists spanning the floor from north to south, but a wider spacing between joists, closer to 1.3-1.4m. The wider spacing reflects the extension of the post-1104 church to the west. New joists also appear to have been added at the interior edges of the north and east walls (possibly the south as well but there is less evidence for this). This would fit with a floor replaced within the existing church structure.

The western end of the church was subject to the most extensive renovation (Figure 24). The foundation to the south of the entrance was removed and rebuilt with new stone and turf, which included the Hekla 1104 tephra [132]. A new entrance ramp was added to the

church. The old church entrance does not appear to have had a pavement as Hekla A.D. 1104 tephra is preserved in situ on the ground under the new ramp. In the reconstruction, the tephra was covered, and preserved, by the addition of a ramp made up of mixed gravel, soil and turf [126]. A few flat stones were set into the surface of the new ramp suggesting a pavement. The ramp ended with a small layer of turf construction [125] that would have been immediately against the wooden church wall or possibly under the church threshold. The turf is relatively clean and soft and was probably protected by a wooden floor in the doorway threshold.

The gable end of the church was extended to the west with the addition of new posts to the west of the original west end of the church. There is no evidence that the new posts replaced the original western church posts and it is most likely that the new addition extended the existing church structure rather than fully replacing it. The new posts were placed on stone pads, [174] and [175], situated about 0.60 meters west of the original church corner posts. It is unclear if the new addition expanded the interior of the church or if it added a roofed and partially enclosed entry outside of the church. The northwest post-pad [174] is out of alignment with the line defined by the two northern church corner posts [155 and 168] whereas the southwest post-pad [175] extends the line defined by the two southern corner posts [166 and 167].

With the addition to the western end of the church the turf wall on the south side of the church [123] was extended to match the new western end of the church. The sequence is not as clear on the north side of the church. No post-1104 turf similar to [123] on the south side was identified extending the north wall to the end of the newly expanded gable end of the church. The area is close to the intrusive 20th-century cesspit and the pre-1104 repair to the west end of the north turf wall ([151],[154],[172]). On the north side of the church, it was difficult to draw a clear interface between the post-1104 turf fill [109] and the upper layers of collapsed church wall; this interface did not become fully clear until the upper layers of collapse, which included white tephra, had been removed revealing a

clear division between the pre-1104 turf in the wall and the abutting turf fill layers. The area in the northwest corner of the church was where the initial removal of the [109] turf fill layer began in 2015 before the boundaries of the church had been clearly discerned and it is possible that a post-1104 turf wall was removed with the post-1104 turf fill.

Two shallow pits [127] and [128] were dug against the western end of the church. Both cuts were made after the Hekla 1104 tephra fell and appear to be integral to the new post-pads. The cut and fill on the north side of the entrance extended a short distance under the likely location of the gable end of the church. The cut on the south side originally extended under the wall and into the interior of the church but the inside part was filled by the new foundation [132]. The exact purpose of these pits is elusive. They appear to be extending the new internal foundation cut [163] but leave a gap in the middle where the church entrance was. It may be that the entrance to the church was intentionally left partially intact as part of the repair. If this is the case then it likely indicates that the expansion of the gable end of the church was largely external, something like a porch, and that the main west wall of the church was not moved during the repairs.

Both the north and south church walls appear to have been largely removed post-1104 and new turf was added on top of the old foundation. The end of the new turf wall on the north side of the church [118] is unclear but the new wall on the south side [123] extended all the way to the gable end of the church on the west. There is evidence for repair on the north and south sides of the church as well. The interior edge of the walls on both the north and south side appear to have been truncated by a thin cut or disturbance between the turf walls [133] and [134] and the turf in the interior fill [113]. For most of its length the gap is about 8-10 cm wide. The gap follows the line defined by foundation stones and suggests that the interior of the wall was cut and the foundation repaired and refilled in the post-1104 reconstruction of the church. The fill between them has a different turf which includes Hekla 1104 tephra. Hekla 1104 tephra also traces the inside contact of the wall. The disturbed area expands at the corners

of the church and in the middle of the north and south walls.

Abandonment and deconstruction of the church

The initial deconstruction of the church involved the removal of much of the timber structure and floor. The small pieces of wood that survive are almost all associated with fragments of in situ structure. It is very unlikely that more elements of a collapsed timber structure would not have survived if they had remained in place after the abandonment of the church. The first fill layer [148] inside the church is immediately on the excavated subsurface and must have been deposited after the flooring was removed. This compacted layer of soil and turf was restricted to the middle of the western half of the church.

The interior of the church was filled with collapsed turf [135]. The uppermost interface of [135] overlapped the foundation cut inside the church and in places the remains of the turf walls on the north and south sides of the church [133] and [134]. It did not extend into the choir [160].

The turf was mixed with patches of the white Hekla 1104 tephra, which appears to have been incorporated into or was layered on the turf that collapsed inside the building. The pattern and coloration of the turf and the patches of Hekla 1104 tephra are quite distinct from the mixed fill layer found outside the church covering much of the churchyard [109] and these are likely to represent different events. The collapsed turf blocks and debris ranged in size from approximately 1-20 cm in length. The deposit contained fragmented animal bones, charcoal, degraded purplish-brown fibrous mottles of what appeared to have been wood, and fragments of fire-cracked cobbles that were likely used as cooking stones. The domestic trash mixed into the turf indicates dumping from another area of the farm.

Overall, the sequence is suggestive of an initial period of collapse generated from the deconstruction of the church and likely removal of most of the wooden structure. This was followed by the leveling or natural slumping of the rocky post-1104 ramp [125] that was constructed on the gable end of the church. This initial

period of collapse appears to have been followed by a longer period of collapse and dumping of domestic rubbish from another part of the farm.

Post-Cemetery Activity

The few post-1104 graves suggest a limited period of use for the cemetery in the 12th century. The church could have remained active after burial ceased but was definitely out of use before 1300 when the dark Hekla layer fell on a relatively flat and leveled surface across the church and cemetery.

The church and cemetery show some evidence for deliberate closure and leveling. A layer of mixed turf with Hekla 1104 tephra [109] was on top of the deliberate post-1104 turf fill layer [110]. The mixed layer covered most of the cemetery with the exception of the small section in the southwest of the enclosure wall and the area of the church. The most likely source for the mixed turf is from the dismantling of the church, which was reconstructed with turf that include the white tephra layer. The church showed little evidence for collapse inside the structure or any wall slump associated with the turf wall. It seems likely that the turf walls of the church and cemetery enclosure wall were deliberately leveled and the turf spread across the cemetery. The wooden structure of the church also appears to have been removed. While some wood survived where the church sills sat these were small fragments. Given that small fragments of wood survived, there would have been much more wood if the structure had collapsed in place. The wooden church may have been salvaged for other uses or moved to a new location, possibly the site of a new church. There is a historical record to church services performed at Keflavík in 1394. If these services were associated with a church, it does not appear to have been located at the same site as the early Christian cemetery.

The interface between the last deliberate turf fill layer [110] and the destruction layer [109] was littered with large, poorly-preserved animal bones and fire cracked rock. These appear to have accumulated before the church was dismantled. It seems unlikely that kitchen garbage would have been deposited in the cemetery

when it was in use or that it represents some sort of deliberate ritual activity associated with the closure of the cemetery or church. It may represent a period of limited use on the site, for example the continuation of the church after the closure of the cemetery or simply a period of inactivity before the church structure was removed and levelled.

The cemetery area continued to be used for dumping after the walls and church structure were levelled. There are a number of intrusive pit features, [112], [114], [115] and [116], cut into the western half of the area. They are concentrated in and around the cemetery enclosure wall. In general, these pits follow

the contours of the cemetery enclosure wall, the cemetery entrance, and the immediate interior of the enclosure wall suggesting that these features were remained at least partially visible when the pits were cut. They are all post-1104 and some may be post-1300 and are the only features from between 1300 and the late 20th century preserved in this part of the site. Most of the pits consist of charcoal, ash, fire-cracked rock, and animal bones and likely represent the disposal of kitchen waste. Each pit is relatively small and may contain the material from a single cooking event.

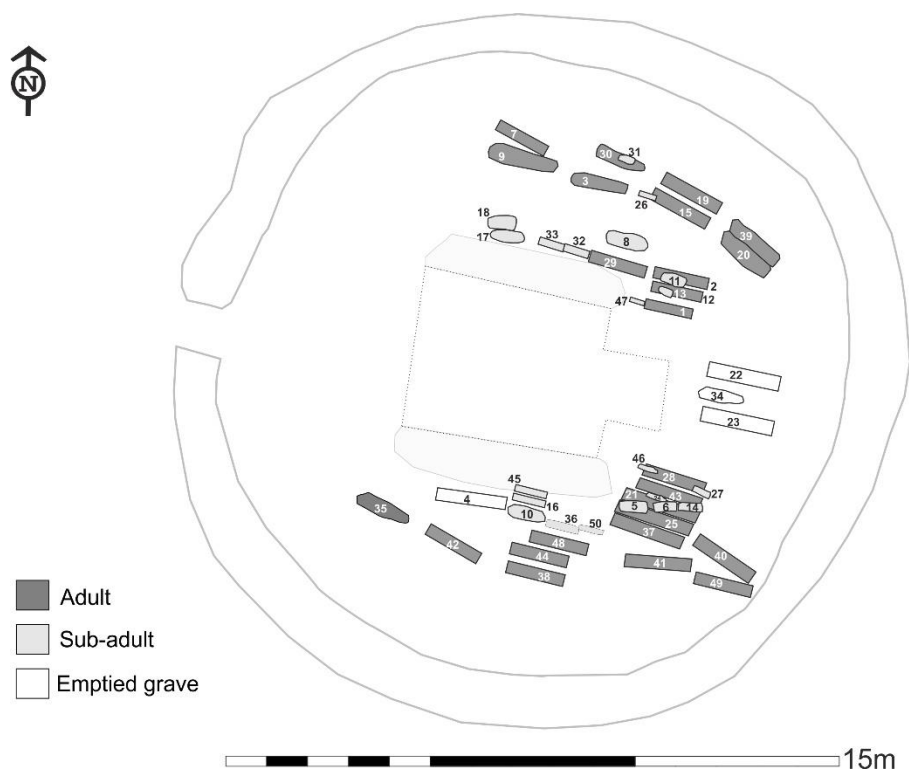


Figure 25. A figure showing the layout and numbers of graves in the cemetery. The seven graves excavated in 2017 were in the southeastern “corner” of the cemetery.

Graves

In the summer of 2017 the final seven graves [graves 36, 38, 40, 44, 48, 49 and 50] were excavated. Two graves were those of infants [36 and 38] but five graves [38, 20, 44, 48 and 49] contained adults (Figure 25). The adults had been buried in coffins but neither of the children. Three of the adult graves had been damaged by the electric cable that had cut through the foot end of the graves but only in grave 48 had the bones been disturbed. Both infant graves, however had been extensively damaged, in grave 36 the left side and lower half of the skeleton was absent and grave 50 could only be established by the careful sieving of the fill of the electric line plough zone.

None of the graves were marked on the surface except grave 38 where a large boulder had been placed on top of the middle of the grave. A machine had to be brought in to remove the stone which proved to weigh around 900 kg.

Two graves [40 and 49], in the southeastern corner of the cemetery seem to have been dug at the same time. On the surface was, what appeared to be, one large grave cut [200], but when the cut had been excavated to about 20cm it became obvious that it contained two graves. Grave 49 was south of grave 40 and had a similar orientation as graves nearby, but grave 40 had a more NW-SE orientation. The grave had obviously been meant to lie next to grave 49 with the same orientation. But upon excavation the grave diggers had come upon a large natural rock and in order not to clip the next grave to the west [41] they changed the orientation of the grave. Both the sequence of excavation and the fact that there was a single large cut on the surface suggests the graves were taken at the same time. These two graves had been placed right up against the cemetery wall and the water drain [191] when there was still enough space to extend pre-existing grave rows to the south. This may indicate that these individuals did not belong to the farm household or were perceived to be of a different status.

Grave 36

Grave 36 was that of an infant (Figure 26). The grave had been dug next to a large stone, wedged between the stone and the coffin in grave 48. It was not discernible on the surface and the grave itself was more of a hole than a structured grave. The bones were badly preserved, flaking and broken, and bones were missing, especially on the left side and the leg bones. This is most likely due to the disturbance of the soil when an electricity line had been ploughed down about 40cm east of the grave.



Figure 26. Skeleton in grave 36.

Grave 38

Grave 38 was the southernmost grave in the cemetery, in a line of three graves extending from east-west. On the middle of the grave was a large rock weighing approximately 900 kg, which obviously had been placed there as a grave marker. The electricity cable had been ploughed through the grave just south of the stone but

had not damaged either the coffin or underlying leg bones (Figure 27). The grave fill consisted of heavy packed gravel. The grave contained a coffin. A large rock had been placed on the coffin at the head end.



Figure 27. Skeleton in grave 38.

Grave 40

Grave 40 was visible on the surface in what appeared to be a large grave cut in the south-eastern most part of the cemetery. When the grave cut was excavated it became evident that a pit had been dug for two individual graves but when a large stone was discovered in the foot end of the northern lying grave the orientation of the grave was changed. Hence it was oriented NW-SE. The grave contained a coffin and a well-preserved skeleton of an adult (Figure 28). Only the foot bones were badly preserved which may be due to the fact that the grave was slightly sloping, and soil was moister in foot-end of the grave. The foot end of the grave was also situated under the entrance of a water drain [161] through the cemetery wall. The grave fill was heavy with gravel.



Figure 28. Skeleton in grave 40.

Grave 44

Grave 44 lay just south of grave 48, about 1.4m south of the southern church wall. The grave contained a coffin and it pre-dated 1104. The ploughed down electricity line lay through the coffin in the foot-end of the grave which had broken the posterior tibiae and destroyed footbones (Figure 29). The bones were relatively well-preserved but some flaking and breakage, especially of the vertebrae.



Figure 29. Skeleton in grave 44.

Grave 48

Grave 48 was situated about a metre south of the southeast corner of the church wall. It contained a coffin pre-dated 1104. The condition of the bones was relatively good apart from the lower leg bones which had been partly broken and shifted due to the ploughing down of the electric line (Figure 30). Both arms were slightly flexed in over the pelvis and the legs were parallel to each other. Skull had fallen to the side, facing south.



Figure 30. Skeleton in grave 48.

Grave 49

Grave 49 lay just south of grave 40 in the south-eastern part of the cemetery. The cut for both graves was visible as one big grave cut on the surface but once down at the level of glacial gravel it became two distinct graves. Both graves pre-dated 1104. The grave had been cut about 40cm down into the glacial gravel. It contained a coffin. The body lay in a supine position with left arm down by the side and the right lower arm slightly flexed inwards over the pelvis (Figure 31).



Figure 31. Skeleton in grave 49.

Grave 50

The existence of grave 50 was only indicated by the presence of infant bones found in the churned-up soil where the electric cable had been ploughed down. The grave probably lay east of the infant grave 36 and may also have been placed on top of or next to the coffin in grave 48. It had been destroyed by the ploughing down of the cable.



Figure 32. A small pit next to a large stone in context [199.] Arrow points to worked whalebone 2017-16-17.

Finds 2017

In total, 11 finds were recovered during the 2017 season. Eight of those were nails from the coffin in grave 38. A white stone was found in a drain [191] in the southeastern corner and fragments of a whetstone were found and in the church foundation [163] and a piece of whetstone were recovered. A worked whalebone was found in a small pit [198] within the larger dug down context of larger cut [199] (Figure 32).

Outcomes of the 2017 excavations and further work

The summer of 2017 was the final season of excavation at Keflavík. Seven graves were excavated making the total of graves in the cemetery 50. The cemetery wall was removed to check if there were graves under it and the excavation of the church and other contexts within the cemetery was finalized.

At the end of the 2016 season the remains of a building, presumably a smithy was discovered west of the entrance into the cemetery. The surface of this area was cleared in the 2017 season but not fully excavated. It was established that the building was a smithy that pre-dated the cemetery phase of the site. It was overlain by a raised walkway and a water channel contemporaneous with the cemetery. The white tephra of 1104 covered all of these remains.

Main results of 2017 excavation:

- There were 2 phases of church remodeling or repair, one before and one after A.D. 1104.
- It was established that the church likely had a choir from the onset.
- 7 graves excavated, all pre- dated 1104.
- 7 skeletons were retrieved.
- A 900 kg stone was removed from grave 38, the largest grave marker found in the cemetery.
- The remains of a smithy, a raised walkway and drainage ditch were unearthed west of the cemetery. The smithy pre-dated the site but the walkway probably connected the cemetery and the associated dwelling west of the cemetery.
- No graves were found under the cemetery wall.
- An interesting system of water channeling was unearthed in the cemetery.
- Further work and final reporting on the osteological and palaeopathological analysis of the skeletal material which began in the fall of 2017.
- Final reporting of wood analysis, begun in 2017.
- Publication of a comprehensive final report, writing of scientific articles.

The Keflavík site has provided an important data set both for the research objectives of the SCASS project as well as for the study of late Viking-Age early medieval household and family dynamics. Hegranes with its two fully excavated 11th-century cemeteries and detailed research on early settlement history will provide material for scientific research for years to come.

At the end of the season a geotextile was laid out over the part of the area which contained unexcavated remains and then the entire area was covered with the excavated soil and grass seeds were planted and turf laid down in consultation with the landowners.

References

Diplomatarium Islandicum (Íslenskt fornbréfasafn), III. 1896. Hið Íslenska bókmenntafjelag, Copenhagen.

Bolender, D.J., Kathryn A. Catlin, Brian N. Damiata, John Schoenfelder, Rita S. Shepard, John M. Steinberg and Guðný Zoëga. 2015. Geophysical Prospection at Keflavík, Skagafjörður Iceland 2012-13. Preliminary Report of the Skagafjörður Church and Archaeological Settlement Survey. Fiske Centery for Archaeological Research, University of Massachusetts Boston.

Pálsson, Hjalti

2010 Byggðasaga Skagafjarðar: V. Bindi Rípurhreppur - Viðvíkurhreppur. Sögufélag Skagafirðinga, Sauðárkróki.

Service, Museum of London Archaeology

1994 Archaeological Site Manual, Third edition. Museum of London, London.

Zoëga, Guðný and Douglas Bolender (2016) Keflavík on Hegranes - Cemetery Excavation. Interim Report 2016. Rannsóknaskýrslur Byggðasafns Skagafirðinga 2016/172.

Guðný Zoëga (2014). Early church organization of Skagafjörður, North Iceland. The results of the Skagafjörður Church Project. Collegium Medievale 27, pp. 23-62.

Zoëga, Guðný and Guðmundur St. Sigurðarson

2009 Skagfirska kirkjurannsóknin. Framvinduskýrsla um fornleifarannsóknir 2008. Byggðasafn Skagafirðinga.

Appendix A: Spatial Controls: survey and excavation grid establishment

The effectiveness and utility of archaeogeophysical methods is highly dependent on the degree of spatial control over the collection, integration, and presentation of the datasets. Accurate grids allow for the precise collection of data and correlation with surface features, pre-existing excavation data, and coring. They are also essential for the integration of various geophysical methods that may show complementary attributes of deposits. Slight differences between the actual location of a geophysical reading and the coordinate assigned during survey can weaken or eliminate the value of archaeogeophysical surveys. Inaccurate surveying can also create anomalies where there are none or hide anomalies that would otherwise be apparent. The effects of inaccurate surveying can be magnified when the data is post-processed and filtered.

Grid Establishment

Two based points were established for the Keflavík excavation using a Topcon Hiper SR differential GNSS. Two rocks were used on the north and south sides of the farm mound (Figure 33). Three successive measurements were averaged from the Hiper SR mounted on a tripod using a RTK correction from the local Sauðárkrókur base station via ÍSMAR. These base points were used for all successive total station set ups and site measurements.

Spatial measurements: total station, kite- and pole-based low altitude aerial photography, and photogrammetry

Spatial measurements were made using a Topcon total station or based on kite- and pole-based orthorectified images generated from multiple camera positions using Agisoft Photoscan photogrammetry software. All measurements use the ISNET93 coordinate system. For each photographic run, ground control points (GCPs) were placed in the subject area and measured with the total station for input into Photoscan to generate orthorectified composite images and

corners of the excavation area and pinned in place to use as GCPs for the kite photos. Blue poker chips were used for the pole photos.

Ricoh GR was used with the kite and a Nikon Coolpix A was used with the pole. Both cameras have a fixed 18.33mm f/2.8 lens (28mm equivalent in a 35mm camera) and built in intervalometer, which was set to take photographs every 5 seconds. Both cameras were set to record data in RAW format. RAW photos were converted to TIFF using Adobe Photoshop for photogrammetry modeling in Photoscan.

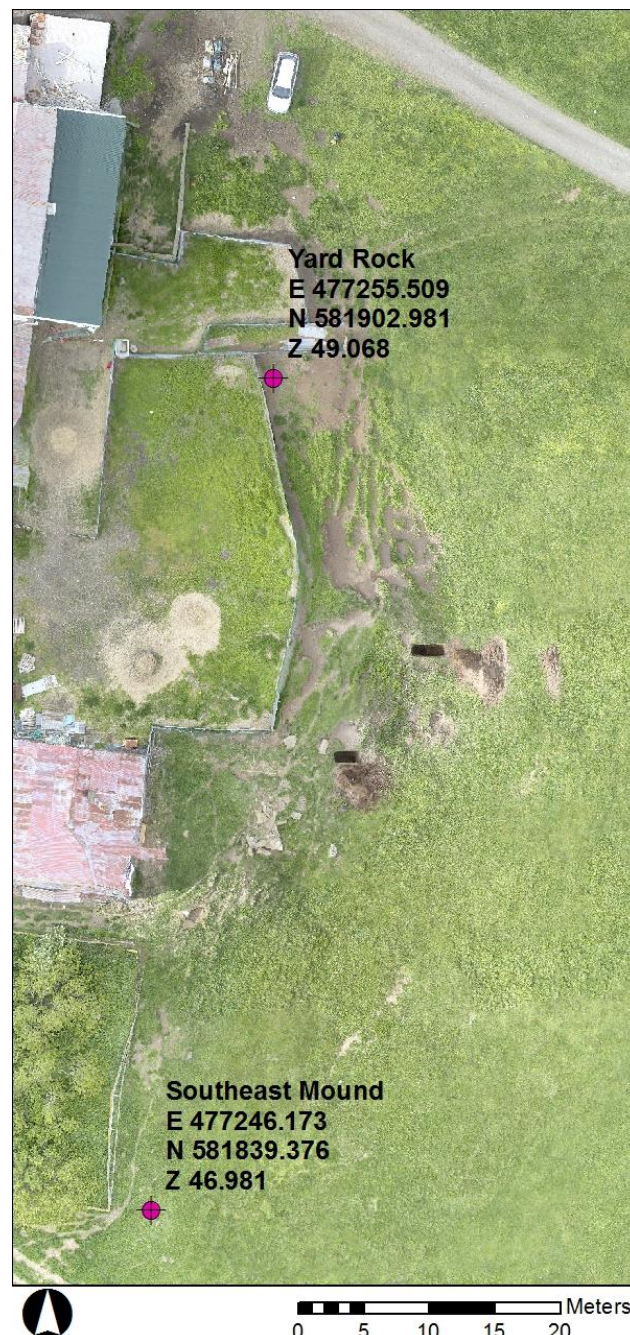


Figure 33. GNSS measured base points for total station set up.

For kite photos, the Ricoh GR camera was enclosed in layers of closed-cell polyethylene foam inside a Ziploc brand plastic box, which was hung from the kite line via a “Picavet” string suspension. For kite photos, the photo rig was suspended from an Air Affairs Sutton Flow Form 16. This design proved effective in protecting the camera during “hard landings” and in keeping the camera pointed downward at near-vertical angles during flight. Our standard photograph collecting procedure was for the kite operator to walk a loose grid pattern, walking a set number of strides, stopping long enough for the camera to take 2-3 shots, and repeating. When available, a second person stood either directly under the camera or to the side in order to keep the operator appraised of the area being photographed. Kite photos were collected at the beginning of fieldwork before site opening, at two occasions as excavation proceeded, and again at the end of the excavation prior to site closure.

Pole photos were collected of various contexts, structures, and of graves. The Nikon Coolpix A was suspended from a 4-meter extension pole topped by a mount that allows the camera to self-balance pointing down. For some features, such as the bottom of graves, the camera was simply held by hand and oblique shots were collected in addition to the top-down shots to better aid in 3d modelling of complex features in Photoscan.

The resulting photographs can be georeferenced and used to establish a visual overview of site and surface conditions including the location of visible ruins, vegetation and other surface features to aid in the interpretation of geophysical anomalies. Agisoft’s Photoscan photogrammetry software was used to produce 3d models of features. These models can be output as georeferenced orthophotos and digital elevation models (DEMs) for incorporation in GIS.

Kite-based and pole-based photography datasets include:

- 1) Unprocessed RAW images. Full collection of digital photos from each kite flight and pole run.
- 2) Selected TIFF converted images.
- 3) 3d models in Photoscan format.

- 4) Orthorectified composite images generated from 3d models in Photoscan.
- 5) Digital elevation models generated from 3d models in Photoscan.

Appendix B:
Context/photo/find/sample registers

Keflavík cemetery excavation 2017 - list of contexts

CTXT	DATE	TYPE	CLASS	DESCRIPTION	ID
178	28.06.2017	Cut	Posthole	Small posthole for sill base, north interior wall of church; west of 179	DJB
179	28.06.2017	Cut	Posthole	Small posthole for sill base, north interior wall of church; east of 178	DJB
180	28.06.2017	Deposit	Natural	Brown aeolian layer with tephra under church walls and floor	DJB
181	28.06.2017	Cut	Cut	Cut for large stone placed over grave 38	GZ
182	29.06.2017	Cut	Cut	Small post hole, middle west wall of church interior	SKD
183	30.06.2017	Deposit	Collapse	Collapsed turf west of churchyard	DJB
184	30.06.2017	Deposit	Floor	Past ash and charcoal floor in "smithy" (unexcavated)	DJB
185	30.06.2017	Deposit	Wall	Turf wall on south side of "smithy" structure (unexcavated)	DJB
186	30.06.2017	Deposit	Platform	Turf and stone walkway west of churchyard entrance (unexcavated)	DJB
187	42919	Cut	Posthole	Posthole in southeast corner of church choir	DJB
203	42919	Fill	Posthole	Fill in posthole [187]	
188	42919	Deposit	Collapse	Turf fill inside church, northeast corner	DJB
189	42919	Deposit	Repair	Stone foundation line on exterior east side of the churchyard enclosure wall	SKD
190	42919	Cut	Repair	Cut and turf fill with H 1104 in [189]	SKD
204	42919	Fill	Repair	Turf fill in cut [190]	GZ
191	04.07.2017	Cut	Drain	Cut for drain in southeast cemetery enclosure wall	GZ
192	42920	Fill	Drain	Fill in drain [191]	GZ
193	05.07.2017	Cut	Foundation	Sill foundation cut with stones, west interior entrance to church	DJB
194	06.07.2017	Cut	Drain	Water drain in northeast of churchyard enclosure wall	GZ
195	06.07.2017	Cut	Pit	Small pit with fire cracked rock west of church, inside cemetery	GZ
196	07.07.2017	Cut	Pit	Large semi circular cut in southeastern cemetery.	GZ
197	11.07.2017	Fill	Redeposited	Mixed fill layer in cut [199] southeast cemetery	GZ
198	11.07.2017	Cut	Pit	Round cut with soil fill, stones, and animal bone in large cut [196]	GZ
199	11.07.2017	Fill	Stones	Fill in small pit [198] in southeastern cemetery	GZ
200	42935	Fill	Grave	Large surface cut for graves 40 and 49	GZ
201	30.06.2017	Fill	Repair	Turf with 1104, filling in cut for repair in eastern cemetery wall	GZ
202	42919	Fill	Pit	Fire cracked stones filling a small pit west of church	GZ

Keflavík cemetery excavation 2017 - list of finds

Name	find #	Type	Material	Description	Context #	ID	Date
Keflavík cemetery	2017-16-18	Find	Stone	A fragment of a whetstone in church foundation	[163]	SKD	28.6.2017
Keflavík cemetery	2017-16-08	Find	Lithic	White stone	[191]	SKD	4.7.2017
Keflavík cemetery	2017-16-09	Find	Metal	Iron nail in coffin in grave 38	Grave 38	GZ	6.7.2017
Keflavík cemetery	2017-16-10	Find	Metal	Iron nail in coffin in grave 38	Grave 38	BZ	7.7.2017
Keflavík cemetery	2017-16-11	Find	Metal	Iron nail in coffin in grave 38	Grave 38	BZ	8.7.2017
Keflavík cemetery	2017-16-12	Find	Metal	Iron nail in coffin in grave 38	Grave 38	BZ	8.7.2017
Keflavík cemetery	2017-16-13	Find	Metal	Iron nail in coffin in grave 38	Grave 38	BZ	8.7.2017
Keflavík cemetery	2017-16-14	Find	Metal	Iron nail in coffin in grave 38	Grave 38	BZ	8.7.2017
Keflavík cemetery	2017-16-15	Find	Metal	Iron nail in coffin in grave 38	Grave 38	BZ	11.7.2017
Keflavík cemetery	2017-16-16	Find	Metal	Iron nail in coffin in grave 38	Grave 38	BZ	11.7.2017
Keflavík cemetery	2017-16-17	Find	Bone	Worked whale bone in pit [198]	[198]	GZ	11.7.2017

Keflavík cemetery excavation 2017 - grave registry

Museum #	Grave #	Coffin	Width_head_cm	Width_foot_cm	Depth_cm	Length_cm	Age categor	Date	Excavator
2017-16-01	36		38	22	45	96	Sub-adult	29.6.2017	BZ
2017-16-03	38	1	47	44	66	215	Adult	8.7.2017	BZ
2017-16-03	40	1	60	42	62	190	Adult	28.6.2017	MHH
2017-16-04	44	1	61	51	65	184	Adult	7.7.2017	BZ
2017-16-05	48	1	39	28	62	170	Adult	4.7.2017	BZ
2017-16-06	49	1	47	25	67	172	Adult	3.7.2017	MHH
2017-16-07	50		NA	NA	NA	NA	Sub-adult	10.7.2017	GZ

Keflavík cemetery excavation 2017 - photo registry

Photo #	Context	Date	ID	Description	Facing	Folder
4247	G40	26.6.2017	MHH	Grave 40 - large grave cut	W	EOS
4248	G40	26.06.17	MHH	Grave 40 - large grave cut	S	EOS
4252	G40	26.06.17	MHH	West end of grave fill in grave 40	E	EOS
4254	G40/G49	26.06.17	MHH	Graves 40 and 49 on surface	W	EOS
4255	G40/G49	26.06.17	MHH	Graves 40 and 49 on surface	S	EOS
4257	G40	26.06.17	MHH	West end of grave fill in grave 40	E	EOS
4258	G40	26.06.17	MHH	West end of grave fill in grave 40	E	EOS
4259	G40	26.06.17	MHH	West end of grave fill in grave 40	E	EOS
4260	G40	26.06.17	MHH	West end of grave fill in grave 40	N	EOS
4261	G44/48	27.06.17	BZ	Graves 44 and 48 on the surface	S	EOS
4262	G44/48	27.06.17	BZ	Graves 44 and 48 on the surface	W	EOS
4263	G44/48	27.06.17	BZ	Graves 44 and 48 on the surface	S	EOS
4264	G44/48	27.06.17	BZ	Graves 44 and 48 on the surface	W	EOS
4265	G44/48	27.06.17	BZ	Graves 44 and 48 on the surface	E	EOS
4266	G41/48	27.06.17	BZ	Cut grave 48 in grave 41	W	EOS
4267	G44	27.06.17	BZ	Grave 44 on the surface	E	EOS
4268	G36	27.06.17	BZ	Grave 36 at skeleton level	E	EOS
4270	G40	27.06.17	MHH	Upper half of skeleton in grave 40	W	EOS
4271	G40	27.06.17	MHH	Upper half of skeleton in grave 40	W	EOS
4272	G40	27.06.17	MHH	Upper half of skeleton in grave 40	W	EOS
4273	G40	27.06.17	MHH	Upper half of skeleton in grave 40	W	EOS
4275	G38	27.06.17	GZ	Cut around stone over grave 38	E	EOS
4276	[155][166]	27.06.17	SKD	Western half of church, posthole [155] closer, posthole [166] further away		EOS
4278	G36	28.06.17	BZ	Grave 36- grave fill next to stone	W	EOS
4279	G36	28.06.17	BZ	Grave 36- grave fill next to stone	From above	EOS
4287	G40	28.06.17	MHH	Grave 40 - skeleton	W	EOS
4288	G40	28.06.17	MHH	Grave 40 - skeleton	W	EOS
4289	G40	28.06.17	MHH	Grave 40 - skeleton	W	EOS
4290	G40	28.06.17	MHH	Grave 40 - skeleton - upper half	W	EOS
4291	G40	28.06.17	MHH	Grave 40 - skeleton - middle	From above	EOS
4292	G40	28.06.17	MHH	Grave 40 - skeleton - pelvis	From above	EOS
4293	G40	28.06.17	MHH	Grave 40 - skeleton - legs	From above	EOS

Keflavík cemetery excavation 2017 - photo registry

Photo #	Context	Date	ID	Description	Facing	Folder
4294	G40	28.06.17	MHH	Grave 40 - skeleton - pubic symphyses	W	EOS
4295	G40	28.06.17	MHH	Grave 40 - skeleton - skull	From above	EOS
4297	G36	28.06.17	MHH	Grave 40 - skeleton - upper half	From above	EOS
4298	G36	28.06.17	BZ	Grave 36 - infant skeleton	From above	EOS
4855	G39	28.06.17	BZ	Outline of grave 39	From above	Nikon
4856	G39	28.06.17	BZ	Outline of grave 39	From above	Nikon
4857	Overview	28.06.17	DJB	Overview of church fully excavated	E	Nikon
4858	Overview	28.06.17	DJB	Overview of church fully excavated	E	Nikon
4860	Overview	28.06.17	DJB	Overview of church fully excavated	E	Nikon
4863	[164]	28.06.17	DJB	Overview of church fully excavated	E	Nikon
4864	[164]	28.06.17	DJB	Overview of church fully excavated	E	Nikon
4865	[164]	28.06.17	DJB	Overview of church fully excavated	E	Nikon
4866	[164]	28.06.17	DJB	Patch of [164] inside church	N	Nikon
4867	[164]	28.06.17	DJB	Patch of [164] inside church	N	Nikon
4868	[164]	28.06.17	DJB	Patch of [164] inside church	From above	Nikon
4869	[164]	28.06.17	DJB	Patch of [164] inside church	N	Nikon
4870	[164]	28.06.17	DJB	Patch of [164] inside church	From above	Nikon
4871	[164]	28.06.17	DJB	Patch of [164] inside church	From above	Nikon
4872	[178][179]	28.06.17	DJB	Contexts [178][179] - cut into sill in church	N	Nikon
4873	[179]	28.06.17	DJB	Context [179] - cut in sill in church	N	Nikon
4874	[178]	28.06.17	DJB	Context [178] - cut in sill in church	N	Nikon
4875	[166]	28.06.17	DJB	SE posthole in church - partial excavation	S	Nikon
4876	[166]	28.06.17	DJB	SE posthole in church - partial excavation	From above	Nikon
4878	[166]	28.06.17	DJB	Bone sample [204] in posthole [166] close up	From above	Nikon
4879	G40	28.06.17	MHH	Grave 40 - skeleton fully excavated	W	Nikon
4880	G40	28.06.17	MHH	Grave 40 - upper skeleton	From above	Nikon
4881	G40	28.06.17	MHH	Grave 40 - middle of skeleton	From above	Nikon
4882	G40	28.06.17	MHH	Grave 40 - lower skeleton	From above	Nikon
4883	G40	28.06.17	MHH	Grave 40 - skeleton excavated	E	Nikon
4884	G40	28.06.17	MHH	Grave 40 - skeleton excavated	E	Nikon
4885	G40	28.06.17	MHH	Grave 40 - upper half of skeleton	From above	Nikon
4886	G40	28.06.17	MHH	Grave 40 - middle of skeleton	From above	Nikon

Keflavík cemetery excavation 2017 - photo registry

4887	G40	28.06.17	MHH	Grave 40 - legbones	From above	Nikon
4300	G36	29.06.17	BZ	Grave 36 - infant skeleton	From above	EOS
4301	G36	29.06.17	BZ	Grave 36 - infant skeleton	From above	EOS
4304	G36	29.06.17	BZ	Grave 36 - infant skeleton - left armbones removed	From above	EOS
4305	G36	29.06.17	BZ	Grave 36 - infant skeleton	From above	EOS
4307	G36	29.06.17	BZ	Grave 36 - infant skeleton - left armbones removed	From above	EOS
4308	G36	29.06.17	BZ	Grave 36 - infant skeleton - left armbones removed	From above	EOS
4311	G36	29.06.17	BZ	Grave 36 - infant skeleton - left armbones removed	W	EOS
4312	G36	29.06.17	BZ	Grave 36 - infant skeleton - close up	From above	EOS
4313	G40	29.06.17	MHH	Grave 40 - empty coffin	SE	EOS
4314	G40	29.06.17	MHH	Grave 40 - empty coffin	NW	EOS
4315	G36	29.06.17	BZ	Grave 36 - fully excavated	From above	EOS
4316	G36	29.06.17	BZ	Grave 36 - fully excavated	From above	EOS
4318	G36	29.06.17	BZ	Grave 36 - skeletons fully excavated - coffin left of skeletons	From above	EOS
4319	G36	29.06.17	BZ	Grave 36 - skeletons fully excavated - coffin left of skeletons		EOS
4320	G36	29.06.17	BZ	Grave 36 - close up of skeleton	From above	EOS
4321	G36	29.06.17	BZ	Grave 36 - close up of skeleton	From above	EOS
4322	G49	29.06.17	MHH	Stones in footend grave 49	E	EOS
4323	G49	29.06.17	MHH	Stones in footend grave 49	E	EOS
4324	G49	29.06.17	MHH	Stones and hollow space in grave 49	E	EOS
4326	G49	29.06.17	MHH	Stones and hollow space in grave 49	E	EOS
4331	G50	30.06.17	BZ	Mixed infant bones in plow line	From above	EOS
4332	G50	30.06.17	BZ	Mixed infant bones in plow line	From above	EOS
4334	G36/G48	30.06.17	BZ	Bottom of grave 36 and grave 48	W	EOS
4335	G36/G48	30.06.17	BZ	Bottom of grave 36 and grave 48	From above	EOS
4336	G48	30.06.17	BZ	Grave 48 - coffin on top of skull	W	EOS
4338	G48	30.06.17	BZ	Grave 48 - coffin on top of skull	W	EOS
4339	[183][186]	30.06.17	SKD	Contexts [183 and 186] west of cemetery	W	EOS
4340	[183][186]	30.06.17	SKD	Contexts [183 and 186] west of cemetery	W	EOS
4341	[183][186]	30.06.17	SKD	Contexts [183 and 186] west of cemetery	NW	EOS
4342	[183][186]	30.06.17	SKD	Contexts [183 and 186] west of cemetery	NW	EOS
4343	[183][186]	30.06.17	SKD	Contexts [183 and 186] west of cemetery	N	EOS
4344	[183][186]	30.06.17	SKD	Contexts [183 and 186] west of cemetery	N	EOS

Keflavík cemetery excavation 2017 - photo registry

Photo #	Context	Date	ID	Description	Facing	Folder
4345	[183][186]	30.06.17	SKD	Contexts [183 and 186] west of cemetery	E	EOS
4346	[184][185]	30.06.17	SKD	Contexts [184 and 185] west of cemetery	W	EOS
4347	[186]	30.06.17	SKD	Contexts [186] west of cemetery	W	EOS
4348	[186]	30.06.17	SKD	Contexts [186] west of cemetery	W	EOS
4349	[124]	30.06.17	SKD	Contexts [124] channel south of walkway	W	EOS
4350	[124]	30.06.17	SKD	Contexts [124] channel south of walkway	W	EOS
4351	[124]	30.06.17	SKD	Contexts [186] and channel [124] south of walkway	NW	EOS
4352	[186]	30.06.17	SKD	Walkway west from cemetery	SW	EOS
4353	G48	30.06.17	BZ	Grave 48 - coffin on top of skull	W	EOS
4354	G48	30.06.17	BZ	Grave 48 - coffin on top of skull	From above	EOS
4374	[187]	03.07.17	DJB	Post pad [187] [187] SE church choir	From above	EOS
4375	[187]	03.07.17	DJB	Post pad [187] SE church choir	W	EOS
4376	[187]	03.07.17	DJB	Post pad [187] SE church choir	From above	EOS
4377	[187]	03.07.17	DJB	Post pad [187] SE church choir	W	EOS
4378	[187]	03.07.17	DJB	Post pad [187] SE church choir - bottom stone	N	EOS
4379	[187]	03.07.17	DJB	Post pad [187] SE church choir - bottom stone	W	EOS
4380	[187]	03.07.17	DJB	Post pad [187] SE church choir after stone removal	N	EOS
4381	[187]	03.07.17	DJB	Post pad [187] SE church choir after stone removal	N	EOS
4382	G48	03.07.17	BZ	Plowed electric line through coffin	W	EOS
4383	G48	03.07.17	BZ	Plowed electric line through coffin - close up	W	EOS
4384	[188]	03.07.17	DJB	Turf pit, partially excavated		EOS
4386	[189]	03.07.17	GZ	Turf with 1104 around water feature [189]	W	EOS
4387	[189]	03.07.17	GZ	Turf with 1104 around water feature [189]	N	EOS
4388	[189]	03.07.17	GZ	Turf with 1104 around water feature [189]	From above	EOS
4389	[189]	03.07.17	GZ	Turf with 1104 around water feature [189]	N	EOS
4390	[188]	03.07.17	DJB	Turf filled foundation trench [188]	W	EOS
4391	[188]	03.07.17	DJB	Turf filled foundation trench [188]	W	EOS
4392	G48	03.07.17	BZ	Grave 48 -coffin with skeleton and electric line	W	EOS
4393	G48	03.07.17	BZ	Grave 48 -coffin with skeleton and electric line	W	EOS
4394	G48	03.07.17	BZ	Grave 48 -coffin and skeleton - upper body	W	EOS
4395	G48	03.07.17	BZ	Grave 48 -coffin with skeleton and electric line	W	EOS
4396	G48	03.07.17	BZ	Grave 48 -coffin with skeleton and electric line	W	EOS

Keflavík cemetery excavation 2017 - photo registry

4397	G48	03.07.17	BZ	Grave 48 -coffin with skeleton and electric line	W	EOS
4398	G48	03.07.17	BZ	Grave 48 -coffin with skeleton - upper body	W	EOS
4399	G48	03.07.17	BZ	Grave 48 -coffin with skeleton and electric line	W	EOS
4400	G49	03.07.17	MH	Grave 49 - excavated skeleton	From above	EOS
4401	G49	03.07.17	MH	Grave 49 - excavated skeleton	From above	EOS
4402	G49	03.07.17	MH	Grave 49 -skeleton upper part	From above	EOS
4403	G49	03.07.17	MH	Grave 49 -skeleton middle	From above	EOS
4404	G49	03.07.17	MH	Grave 49 -skeleton legs	From above	EOS
4405	G49	03.07.17	MH	Grave 49 - close up of skull	From above	EOS
4406	G49	03.07.17	MH	Grave 49 - close up of upper body	From above	EOS
4407	G49	03.07.17	MH	Grave 49 - close up of pelvis	From above	EOS
4408	G49	03.07.17	MH	Grave 49 - close up of upper body	W	EOS
4409	G49	03.07.17	MH	Grave 49 - close up of upper body	W	EOS
4410	[190]	03.07.17	GZ	Context [190] repair turf with 1104 eastern cemetery wall	N	EOS
4411	[190]	03.07.17	GZ	Context [190] repair turf with 1104 eastern cemetery wall	W	EOS
4412	[190]	03.07.17	GZ	Context [190] repair turf with 1104 eastern cemetery wall	W	EOS
4413	[190]	03.07.17	GZ	Context [190] repair turf with 1104 eastern cemetery wall	N	EOS
4414	[190]	03.07.17	GZ	Context [190] repair turf with 1104 eastern cemetery wall	S	EOS
4415	Overview	04.07.17	GZ	Yfirlitsmynd af kirkjugarðsvegg austanverðum	S	EOS
4416	Overview	04.07.17	GZ	Yfirlitsmynd af kirkjugarðsvegg austanverðum	NW	EOS
4417	Overview	04.07.17	GZ	Yfirlitsmynd af kirkjugarðsvegg austanverðum	W	EOS
4419	[190]	04.07.17	SKD	Context [190] repair turf with 1104 eastern cemetery wall	W	EOS
4420	[190]	04.07.17	SKD	Context [190] repair turf with 1104 eastern cemetery wall	NE	EOS
4421	[190]	04.07.17	SKD	Context [190] repair turf with 1104 eastern cemetery wall	N	EOS
4422	[190]	04.07.17	SKD	Context [190] repair turf with 1104 eastern cemetery wall	S	EOS
4423	G49	04.07.17	MHH	Grave 49 - empty coffin	E	EOS
4424	G49	04.07.17	MHH	Grave 49 - empty coffin	W	EOS
4426	[190]	04.07.17	GZ	Close up of turf on stones in eastern cemetery wall	N	EOS
4427	[190]	04.07.17	GZ	Close up of turf on stones in eastern cemetery wall	N	EOS
4428	G40/G49	04.07.17	MHH	Graves 40 and 49 - grave cuts after excavation	N	EOS
4429	G40/G49	04.07.17	MHH	Graves 40 and 49 - grave cuts after excavation	E	EOS
4430	G40/G49	04.07.17	MHH	Graves 40 and 49 - grave cuts after excavation	NE	EOS
4431	G40/G49	04.07.17	MHH	Graves 40 and 49 - grave cuts after excavation	E	EOS

Keflavík cemetery excavation 2017 - photo registry

Photo #	Context	Date	ID	Description	Facing	Folder
4432	G40/G49	04.07.17	MHH	Graves 40 and 49 - grave cuts after excavation	E	EOS
4433	G40/G49	04.07.17	MHH	Graves 40 and 49 - grave cuts after excavation		EOS
4434	G48	04.07.17	BZ	Grave 48 - skeleton and electric line fully excavated	W	EOS
4435	G48	04.07.17	BZ	Grave 48 - skeleton and electric line fully excavated	W	EOS
4436	G48	04.07.17	BZ	Grave 48 - skeleton	From above	EOS
4437	G48	04.07.17	BZ	Grave 48 - close up of upper body	From above	EOS
4438	G48	04.07.17	BZ	Grave 48 - close up of pelvis	From above	EOS
4439	G48	04.07.17	BZ	Grave 48 - close up of leg bones and electric line	From above	EOS
4440	[121]	04.07.17	DJB	Context [121] - channel west of cemetery	W	EOS
4441	[121]	04.07.17	DJB	Context [121] - channel west of cemetery	W	EOS
4442	[121]	04.07.17	DJB	Context [121] - close up of profile of channel west of cemetery	W	EOS
4443	[121]	04.07.17	DJB	Context [121] - channel west of cemetery	NW	EOS
4444	[121]	04.07.17	DJB	Context [121] - channel west of cemetery	NW	EOS
4445	[184] [185]	04.07.17	DJB	"Smithy" floor and wall	W	EOS
4446	[184] [185]	04.07.17	DJB	"Smithy" floor and wall	SW	EOS
4447	[184] [185]	04.07.17	DJB	"Smithy" floor and wall	NW	EOS
4448	[186]	04.07.17	DJB	Raised walkway to west from cemetery	W	EOS
4449	[186]	04.07.17	DJB	Raised walkway to west from cemetery	W	EOS
4450	[184] [185]	04.07.17	DJB	Contact "smithy" floor/wall north of walkway [186]	W	EOS
4451	[184] [185]	04.07.17	DJB	Contact "smithy" floor/wall north of walkway [186]	From above	EOS
4452	[186]	04.07.17	DJB	Raised walkway to west from cemetery	W	EOS
4453	Profile	05.07.17	DJB	Western profile of the cemetery area - overview	W	EOS
4454	Profile	05.07.17	DJB	Western profile of the cemetery area - overview	W	EOS
4455	Profile	05.07.17	DJB	Western profile of the cemetery area - meter 1 starting from south	W	EOS
4456	Profile	05.07.17	DJB	Western profile of the cemetery area - meter 1 starting from south	W	EOS
4457	Profile	05.07.17	DJB	Western profile of the cemetery area - meter 2 starting from south	W	EOS
4458	Profile	05.07.17	DJB	Western profile of the cemetery area - meter 2 starting from south	W	EOS
4459	Profile	05.07.17	DJB	Western profile of the cemetery area - meter 3 starting from south	W	EOS
4460	Profile	05.07.17	DJB	Western profile of the cemetery area - meter 3 starting from south	W	EOS
4461	Profile	05.07.17	DJB	Western profile of the cemetery area - meter 4 starting from south	W	EOS
4462	Profile	05.07.17	DJB	Western profile of the cemetery area - meter 4 starting from south	W	EOS
4463	Profile	05.07.17	DJB	Western profile of the cemetery area - meter 5+ starting from south	W	EOS

Keflavík cemetery excavation 2017 - photo registry

Photo #	Context	Date	ID	Description	Facing	Folder
4464	Profile	05.07.17	DJB	Western profile of the cemetery area - meter 5+ starting from south	W	EOS
4477	[193]	05.07.17	DJB	Sill foundation inside church gable	W	EOS
4478	[193]	05.07.17	DJB	Sill foundation inside church gable	W	EOS
4479	[193]	05.07.17	DJB	Sill foundation inside church gable	W	EOS
4480	G44	05.07.17	BZ	Grave 44 - after excavation	W	EOS
4482	[191]	05.07.17	GZ	Stones in water channel [191] east cemetery wall	W	EOS
4483	[191]	05.07.17	GZ	Stones in water channel [191] east cemetery wall	W	EOS
4484	[191]	05.07.17	GZ	Stones in water channel [191] east cemetery wall	S	EOS
4485	[191]	05.07.17	GZ	Stones in water channel [191] east cemetery wall	E	EOS
4486	[186]	05.07.17	DJB	Brown sextion between H1 and [186] in farm mound	W	EOS
4487	G44	05.07.17	BZ	Stone on top of head end of coffin in grave 44	W	EOS
4488	G44	05.07.17	BZ	Stone on top of head end of coffin in grave 44	W	EOS
4489	[191]	05.07.17	GZ	Water drain [191] in eastern cemetery wall after removal of stones	W	EOS
4490	[191]	05.07.17	GZ	Water drain [191] in eastern cemetery wall after removal of stones	S	EOS
4494	[106]	05.07.17	GZ	Eastern part of cemetery wall defined	S	EOS
4495	[106]	05.07.17	GZ	Eastern part of cemetery wall defined	N	EOS
4496	G44/G48	06.07.17	BZ	Coffin in grave 44 - grave 48 empty	W	EOS
4497	G44/G48	06.07.17	BZ	Coffin in grave 44 - grave 48 empty	W	EOS
4499	[194]	06.07.17	GZ	Water drain [194] in NE corner of cemetery wall	W	EOS
4500	[194]	06.07.17	GZ	Water drain [194] in NE corner of cemetery wall	N	EOS
4501	[194]	06.07.17	GZ	Water drain [194] in NE corner of cemetery wall	S	EOS
4502	[194]	06.07.17	GZ	Water drain [194] in NE corner of cemetery wall	NE	EOS
4503	[194]	06.07.17	GZ	Water drain [194] in NE corner of cemetery wall	SW	EOS
4504	G44	06.07.17	BZ	Stones next to skull in grave 44	W	EOS
4505	G44	06.07.17	BZ	Stones next to skull in grave 44	W	EOS
4506	[195]	06.07.17	GZ	Shallow pit [195] with cracked stones in western half of cemetery	W	EOS
4507	[195]	06.07.17	GZ	Shallow pit [195] with cracked stones in western half of cemetery	W	EOS
4508	[195]	06.07.17	GZ	Shallow pit [195] with cracked stones after emptying	W	EOS
4509	G44	06.07.17	BZ	Skeleton in grave 44	W	EOS
4510	G44	06.07.17	BZ	Grave 44 - middle skeleton	From above	EOS
4511	G44	06.07.17	BZ	Grave 44 - top half of skeleton	From above	EOS
4512	G44	07.07.17	BZ	Grave 44 - skeleton and electric line	W	EOS

Keflavík cemetery excavation 2017 - photo registry

Photo #	Context	Date	ID	Description	Facing	Folder
4513	G44	07.07.17	BZ	Grave 44 - close up of upper half of body	W	EOS
4517	[106]	07.07.17	GZ	Test trench through eastern cemetery wall [106]		EOS
4519	G44/G48	07.07.17	BZ	Bottom of graves 44 and 48	W	EOS
4520	G44/G38	07.07.17	BZ	Cut in grave 44 and grave 38 unexcavated	NW	EOS
4521	G44/G48	07.07.17	BZ	Bottom of graves 44 and 48	W	EOS
4522	[196]	07.07.17	GZ	Water drain in NE corner [196] after removal of stones	NW	EOS
4523	[196]	07.07.17	GZ	Water drain in NE corner [196] after removal of stones	NE	EOS
4524	[196]	07.07.17	GZ	Water drain in NE corner [196] after removal of stones	SE	EOS
4525	[196]	07.07.17	GZ	Water drain in NE corner [196] after removal of stones	SW	EOS
4526	[196]	07.07.17	GZ	Water drain in NE corner [196] after removal of stones	SW	EOS
4527	G44/G38	07.07.17	BZ	Stone in grave cut between graves 38 and 44	S	EOS
4528	G44/G38	07.07.17	BZ	Stone in grave cut between graves 38 and 44	S	EOS
4529	G44/G38	07.07.17	BZ	Cut between graves 38 and 44	S	EOS
4530	G44/G38	07.07.17	BZ	Cut between graves 38 and 44	W	EOS
4531	G38	07.07.17	BZ	Grave 38 - stones and electric plow zone	S	EOS
4532	G38	07.07.17	BZ	Grave 38 - south side of coffin	S	EOS
4533	G38	07.07.17	BZ	Grave 38 - south side of coffin	S	EOS
4534	G38	08.07.17	BZ	Grave 38 - skeleton fully excavated - top half	From above	EOS
4535	G38	08.07.17	BZ	Grave 38 - skeleton fully excavated - middle	From above	EOS
4536	G38	08.07.17	BZ	Grave 38 - skeleton fully excavated - lower half	From above	EOS
4537	G38	08.07.17	BZ	Grave 38 - legs	From above	EOS
4538	G38	08.07.17	BZ	Grave 38 - skeleton fully excavated	W	EOS
4539	G38	08.07.17	BZ	Grave 38 - top half	W	EOS
4540	G38	08.07.17	BZ	Grave 38 - skeleton fully excavated	W	EOS
4541	G38	08.07.17	BZ	Grave 38 - close up of feet	From above	EOS
4542	G38	08.07.17	BZ	Grave 38 - close up of pelvis	From above	EOS
4543	G38	08.07.17	BZ	Grave 38 - close up of upper body	From above	EOS
4544	G38	08.07.17	BZ	Grave 38 - close up of skull	W	EOS
4545	G38	08.07.17	BZ	Grave 38 - close up of upper body	W	EOS
4546	G38	08.07.17	BZ	Grave 38 - close up of feet	E	EOS
4547	G38	08.07.17	BZ	Grave 38- pelvis	From above	EOS
4548	G38	11.07.17	BZ	Grave 38 - coffin after emptying	W	EOS

Keflavík cemetery excavation 2017 - photo registry

Photo #	Context	Date	ID	Description	Facing	Folder
4549	G38	11.07.17	BZ	Grave 38 - coffin after emptying	From above	EOS
4550	G38	11.07.17	BZ	Grave 38 - south side of coffin	S	EOS
4551	G38	11.07.17	BZ	Grave 38 - south side of coffin	S	EOS
4552	G38	11.07.17	BZ	Grave 38 - south side of coffin	S	EOS
4553	Work photo	11.07.17	GZ	Clearing of the area after excavation		EOS
4554	Work photo	11.07.17	GZ	Clearing of the area after excavation		EOS
4555	Work photo	11.07.17	GZ	Clearing of the area after excavation		EOS
4556	Work photo	11.07.17	GZ	Clearing of the area after excavation		EOS
4557	Work photo	11.07.17	GZ	Clearing of the area after excavation		EOS
4558	Work photo	11.07.17	GZ	Clearing of the area after excavation		EOS
4559	Work photo	11.07.17	GZ	Clearing of the area after excavation		EOS
4560	Work photo	11.07.17	GZ	Clearing of the area after excavation		EOS
4561	G38	11.07.17	BZ	Grave 38 - bottom of coffin	W	EOS
4565	[197]	11.07.17	GZ	Circular cut and fill in SE corner of cemetery	S	EOS
4566	[197]	11.07.17	GZ	Circular cut and fill in SE corner of cemetery	S	EOS
4567	[197]	11.07.17	GZ	Circular cut and fill in SE corner of cemetery	S	EOS
4568	[197]	11.07.17	GZ	Circular cut and fill in SE corner of cemetery	W	EOS
4571	[197]	11.07.17	GZ	Circular cut and fill in SE corner of cemetery	N	EOS
4572	[197]	11.07.17	GZ	Circular cut and fill in SE corner of cemetery	E	EOS
4573	[197]	11.07.17	GZ	Circular cut and fill in SE corner of cemetery	S	EOS
4574	[197]	11.07.17	GZ	Circular cut and fill in SE corner of cemetery	SE	EOS
4575	[197]	11.07.17	GZ	Circular cut and fill in SE corner of cemetery	S	EOS
4576	[198]	11.07.17	GZ	Small pit with stones and animal bones [197]	W	EOS
4577	[198]	11.07.17	GZ	Small pit with stones and animal bones [197]	W	EOS
4578	[198]	11.07.17	GZ	Small pit with stones and animal bones [197]	S	EOS
4579	[198]	11.07.17	GZ	Small pit with stones and animal bones [197]	N	EOS
4582	[197]	11.07.17	GZ	Overview of cut [197] after excavation	W	EOS
4585	[197]	11.07.17	GZ	Overview of cut [197] after excavation	E	EOS
4586	[197]	11.07.17	GZ	Overview of cut [197] after excavation	S	EOS
4588	[197]	11.07.17	GZ	Overview of cut [197] after excavation	W	EOS
4589	[197]	11.07.17	GZ	Overview of cut [197] after excavation and removal of stones	S	EOS
4590	[197]	11.07.17	GZ	Overview of cut [197] after excavation and removal of stones	W	EOS

Keflavík cemetery excavation 2017 - Pole photo index

Date	Camera	Description	Photo Range	First Photo	Last Photo
07.17.2015	Nikon Coolpix A	H1104, context 106 enclosure wall	1402-1465	1402	1465
07.18.2015	Nikon Coolpix A	Cemetery	3282-3331	3282	3331
07.24.2015	Nikon Coolpix A	Grave 3, top	1473-1512	1473	1512
07.24.2015	Nikon Coolpix A	Grave 4, top	1583-1654	1583	1654
07.24.2015	Nikon Coolpix A	Graves 5, 6 & 14, top	1517-1568	1517	1568
07.27.2015	Nikon Coolpix A	Find 5 (pjms 36-73), key	1658-1676	1658	1676
07.27.2015	Nikon Coolpix A	Context 113, wood on sill in church	1677-1773	1677	1773
07.28.2015	Nikon Coolpix A	Context 119	1839-1903	1839	1903
07.28.2015	Nikon Coolpix A	Grave 8	1782-1832	1782	1832
07.30.2015	Nikon Coolpix A	Graves 5-6	1915-1948	1915	1948
07.30.2015	Nikon Coolpix A	Graves 7-9	1958-2031	1958	2031
07.30.2015	Nikon Coolpix A	Graves 1-2	2041-2128	2041	2128
07.31.2015	Nikon Coolpix A	Graves 1,2,11	2137-2218	2137	2218
07.31.2015	Nikon Coolpix A	Grave 5; Subsets: GCPs above grave, +GCPs in grave, +flash	2228-2286	2228	2286
07.31.2015	Nikon Coolpix A	Various graves; Quick end-of-day shots w/o GCPs	2295-2342	2295	2342
08.03.2015	Nikon Coolpix A	Grave 11, skeleton	2504-2550	2504	2550
08.04.2015	Nikon Coolpix A	Grave 7, skeleton	2551-2592	2551	2592
08.04.2015	Nikon Coolpix A	Grave 8, skeleton	2593-2624	2593	2624
08.04.2015	Nikon Coolpix A	Grave 6, skeleton	2625-2644	2625	2644
08.06.2015	Nikon Coolpix A	Grave 13, top	2652-2673	2652	2673
08.06.2015	Nikon Coolpix A	Grave 4, bottom	2678-2688	2678	2688
08.06.2015	Nikon Coolpix A	Context 127, church western gable, pre/post-1104	2693-2711	2693	2711
08.07.2015	Nikon Coolpix A	Grave 10, skeleton	2717-2743	2717	2743
08.07.2015	Nikon Coolpix A	Grave 2, skeleton	2747-2785	2747	2785
08.07.2015	Nikon Coolpix A	Context 129, cemetery entrance pavement	2789-2809	2789	2809
08.11.2015	Nikon Coolpix A	Grave 14, skeleton	2812-2833	2812	2833
08.11.2015	Nikon Coolpix A	Grave 4, bottom	2842-2866	2842	2866
08.11.2015	Nikon Coolpix A	Grave 12, skeleton	2880-2927	2880	2927
08.11.2015	Nikon Coolpix A	Church	2930-3002	2930	3002
08.12.2015	Nikon Coolpix A	Grave 1, skeleton in coffin	3032-3050	3032	3050
08.13.2015	Nikon Coolpix A	Grave 1, skeleton	3054-3084	3054	3084
08.03.2015	Nikon Coolpix A	Grave 3, skeleton	2390-2467	2390	2467

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Date	Camera	Description	Photo Range	First Photo	Last Photo
08.03.2015	Nikon Coolpix A	Context 125 and 126, overview	2468-2500	2468	2500
06.30.2016	Nikon Coolpix A	Grave 16, surface with rocks	3101-3108	3101	3108
06.30.2016	Nikon Coolpix A	Grave 16, approximately 10 cm below surface with rocks	3109-3116	3109	3116
07.09.2016	Nikon Coolpix A	Grave 22	3433-3442	3433	3442
07.03.2016	Nikon Coolpix A	Grave 9, skeleton	3117-3148	3117	3148
07.04.2016	Nikon Coolpix A	Church gable	3150-3163	3150	3163
07.05.2016	Nikon Coolpix A	Grave 15, coffin	3164-3175	3164	3175
07.05.2016	Nikon Coolpix A	Grave 22, stones in cut	3179-3209	3179	3209
07.05.2016	Nikon Coolpix A	Context 135, church	3214-3251	3214	3251
07.05.2016	Nikon Coolpix A	Grave 17, skeleton	3253-3264	3253	3264
07.07.2016	Nikon Coolpix A	Grave 19, bottom of grave, skeleton	3265-3278	3265	3278
07.07.2016	Nikon Coolpix A	Grave 22, 27	3315-3353	3315	3353
07.07.2016	Nikon Coolpix A	Context 148, compact layer in bottom of church under [135]	3357-3372	3357	3372
07.07.2016	Nikon Coolpix A	Grave 21, bottom of grave, skeleton	3378-3392	3378	3392
07.07.2016	Nikon Coolpix A	Grave 27 coffin	3393-3396	3393	3396
07.09.2016	Nikon Coolpix A	Graves 22 and 27, large exhumation pit	3402-3423	3402	3423
07.09.2016	Nikon Coolpix A	Excavated church: foundation, wood	3427-3639	3427	3639
07.11.2016	Nikon Coolpix A	Spade marks by east enclosure wall, blurry	3642-3701	3642	3701
07.11.2016	Nikon Coolpix A	North and west of church foundation, cuts	3714-3811	3714	3811
07.11.2016	Nikon Coolpix A	Grave 31, top	3816-3828	3816	3828
07.12.2016	Nikon Coolpix A	Context 153, shovel marks along east interior cemetery wall	3833-3954	3833	3954
07.14.2016	Nikon Coolpix A	Grave 30	3957-3967	3957	3967
07.14.2016	Nikon Coolpix A	Grave 25	3968-3980	3968	3980
07.14.2016	Nikon Coolpix A	Grave 33, infant	3981-3997	3981	3997
07.14.2016	Nikon Coolpix A	Bryndis empty infant grave	4004-4010	4004	4010
07.14.2016	Nikon Coolpix A	Context 159, Red ash layer west of church	4017-4039	4017	4039
07.15.2016	Nikon Coolpix A	Grave 16, skeleton	4041-4054	4041	4054
07.15.2016	Nikon Coolpix A	Context 163, small, deep cut and stones under N sill	4055-4069	4055	4069
07.15.2016	Nikon Coolpix A	Grave 35, stones on top of grave	4070-4090	4070	4090
07.16.2016	Nikon Coolpix A	Grave 20	4092-4121	4092	4121
07.16.2016	Nikon Coolpix A	Context 166, posthole/setting	4123-4147	4123	4147
07.16.2016	Nikon Coolpix A	Context 167, posthole/setting	4151-4185	4151	4185

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Date	Camera	Description	Photo Range	First Photo	Last Photo
07.16.2016	Nikon Coolpix A	Context 155, posthole/setting	4186-4199	4186	4199
07.18.2016	Nikon Coolpix A	Grave 32, skeleton in coffin	4200-4206	4200	4206
07.19.2016	Nikon Coolpix A	Grave 35, skeleton	4207-4224	4207	4224
07.19.2016	Nikon Coolpix A	Grave 47, skeleton	4225-4233	4225	4233
07.19.2016	Nikon Coolpix A	Grave 37, skeleton	4234-4242	4234	4242
07.20.2016	Nikon Coolpix A	Grave 37, coffin	4245-4336	4245	4336
07.20.2016	Nikon Coolpix A	Grave 39, skeleton	4337-4383	4337	4383
07.20.2016	Nikon Coolpix A	Grave 41	4384-4392	4384	4392
07.22.2016	Nikon Coolpix A	Grave 43, skeleton	4393-4491	4393	4491
07.25.2016	Nikon Coolpix A	Grave 42, skeleton	4492-4507	4492	4507
07.25.2016	Nikon Coolpix A	Grave 29, coffin	4508-4542	4508	4542
07.26.2016	Nikon Coolpix A	Grave 29, skeleton	4543-4592	4543	4592
07.26.2016	Nikon Coolpix A	Grave 26, skeleton	4593-4606	4593	4606
07.26.2016	Nikon Coolpix A	Grave 28, skeleton	4607-4633	4607	4633
07.26.2016	Nikon Coolpix A	Grave 38, skeleton under rock	4634-4667	4634	4667
07.27.2016	Nikon Coolpix A	Grave 45, skeleton	4668-4684	4668	4684
08.12.2016	Nikon Coolpix A	Context 129, cemetery entrance	4763-4819	4763	4819
08.12.2016	Nikon Coolpix A	Context 129, cemetery entrance	4820-4842	4820	4842
06.28.2017	Nikon Coolpix A	Grave 40, skeleton	4890-4910	4890	4910
06.29.2017	Nikon Coolpix A	Posthole 166, church SW bottom	4914-4934	4914	4934
06.29.2017	Nikon Coolpix A	Posthole 167, church SE bottom	4936-4954	4936	4954
06.29.2017	Nikon Coolpix A	Posthole 155, church NW bottom	4955-4968	4955	4968
06.29.2017	Nikon Coolpix A	Posthole 182, church W, top	4970-4982	4970	4982
06.29.2017	Nikon Coolpix A	Posthole 182, church W, mid-excavation	4983-4997	4983	4997
06.29.2017	Nikon Coolpix A	Posthole 168, church NE, bottom	4999-5022	4999	5022
06.29.2017	Nikon Coolpix A	Posthole 182, church W, bottom	5023-5036	5023	5036
06.29.2017	Nikon Coolpix A	Under church, end of excavation/natural	5040-5072	5040	5072
06.30.2017	Nikon Coolpix A	Smithy	5074-5136	5074	5136
07.03.2017	Nikon Coolpix A	Posthole 187, SE church choir	5142-5162	5142	5162
07.03.2017	Nikon Coolpix A	Posthole 187, SE church choir	5163-5176	5163	5176
07.04.2017	Nikon Coolpix A	Grave 49	5177-5226	5177	5226
07.04.2017	Nikon Coolpix A	Grave 48, skeleton	5227-5266	5227	5266

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Date	Camera	Description	Photo Range	First Photo	Last Photo
07.04.2017	Nikon Coolpix A	Context 189, stone foundation, east cemetery enclosure wall	5267-5339	5267	5339
07.04.2017	DJI Phantom 3 4k	Context 189, drone video	-		
07.04.2017	Nikon Coolpix A	Context 184, 185, smithy	5340-5453	5340	5453
07.07.2017	Nikon Coolpix A	Grave 44	5454-5481	5454	5481
07.08.2017	Nikon Coolpix A	Grave 38	5480-5546	5480	5546
07.11.2017	Nikon Coolpix A	Context 197, mixed fill, SE churchyard	5547-5590	5547	5590

Keflavík cemetery excavation 2017 - list of samples

Sample#	Context	Type	Bags	Description	ID	Date
203	166	Bone	1	Bone in posthole [166]	DJB	28.6.2017
204	166	Bone	1	Bone in bottom of posthole [166]	DJB	28.6.2017
305	156	Bone	1	Bone in posthole [156]	SKD	29.6.2017
206	G40	Wood	1	Wood from coffin in grave 40	MHH	3.7.2017
207	187	Bone	1	Animal teeth in posthole [187]	DJB	3.7.2017
208	G48	Wood	1	Wood from coffin in grave 48	BZ	4.7.2017
209	184	Wood	1	Slag from surface of smithy	DJB	4.7.2017
210	191	Wood	1	Wood from water channel [191]	SKD	4.7.2017
212	G44	Wood	1	Wood from coffin in grave 44	GZ	7.7.2017
213	G38	Wood	1	Wood from coffin in grave 38	GZ	12.7.2017