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# Trinity Church Archaeological Oversight

## Phase 1 Construction

75 Broadway (Lot 1 Block 49) Manhattan

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Screened soil, North Terrace (J. Geismar 9/13/2018)

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Prepared for Trinity Wall Street  
Through Murphy Burnham & Buttrick Architects  
and Trinity Wall Street  
Prepared by Joan H. Geismar, Ph.D., LLC  
July 2020

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## ABSTRACT

This report presents the methods and findings of archaeological oversight during Phase 1 construction in the churchyard surrounding Trinity Church at Broadway and Wall Street (75 Broadway, Lot 1 on Block 49) in Manhattan. Joan H. Geismar, Ph.D., LLC, as archaeological consultant, initially to Murphy Burnham & Buttrick Architects (MBB) and then to Trinity Wall Street, directed two stages of archaeological oversight (Stage 1 and Stage 2) that followed a scope of work and protocol approved by the New York City Landmarks Preservation Commission. The goal was to recover isolated (scattered) human bone and to document any encountered burials.

Langan Engineers developed the excavation plans that all called for hand excavation carried out by Long Island Concrete (LIC). Following the archaeological protocol, with few exceptions, excavated soil was screened through ¼-in. (0.6 cm) wire mesh (exceptions included incidents of highly saturated soil that were troweled through rather than screened and a few mainly shallow excavations that did not warrant oversight). During Stage 1, Warren George drilled the project's sole soil boring.

Stage 1 comprised eleven days of testing between August 27 and September 13, 2018 when a total of eleven test pits (TPs) were excavated around the church. Stage 2, conducted intermittently from March 26 to September 30, 2019, entailed oversight of sixteen planned TPs as well as deeper excavations to identify locations for piles to support an ADA compliant covered walkway on the South Terrace. Also monitored were excavation of a c. 200 ft. (61.0 m) drainage line that ran from the South Terrace to just north of the church entrance on Broadway and additional testing in and around several test pits to explore burial features and address construction requirements.

Oversight recovered a total of 254 human bones, 193 of them isolated bone and 61 from a partially disturbed infant burial in Stage 1. The burial, which was the only one encountered, was exposed in TP LB-1 while testing the location for the project's sole soil boring. In addition, 39 human teeth were collected for analysis. All skeletal material was recovered from redeposited fill, including the infant burial that, although *in situ*, was disturbed and apparently relocated in the past. While redeposited fill was found throughout, natural soil was identified at three locations: in Stage 1, as noted, at the soil boring site, possibly at 3.2 ft. (1.0 m) BGS but definitely at 7.0 ft. (2.1 m) BGS, and in Stage 2 in Pile Site 4 in TP 9S at c. 7.0 ft. (2.1 m) BGS and in Pile Site 12 in TP 5S at an undetermined depth but well below 4.0 ft. (1.2 m) BGS. Of note were degraded oyster shells from natural soil in TP LB-1, one at 7.5 ft. (2.2 m) BGS, the other at 8.0 ft. (2.4 m) BGS, and an almost whole knobby whelk shell from TP 9S Pile Site 4 also at 7.5 ft. BGS. C-14 dating determined the whelk shell could be almost 1,000 years old, suggesting these three marine shells from the same general vicinity and depth represent a facet of the site's pre-development history.

Phase 1 Construction was completed without impact to burial vaults or undisturbed burials. The church intends to rebury recovered and analyzed skeletal material in the churchyard with a fitting and respectful ceremony.

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Report Writing and Production: Joan H. Geismar, Ph.D.  
Graphics: Amy Geller

## INTRODUCTION

This report presents the methods and findings of archaeological oversight conducted during Phase 1 construction in the churchyard that surrounds Trinity Church at Broadway and Wall Street (75 Broadway, Lot 1 on Block 49), Manhattan (Figures 1 and 2).<sup>1</sup> While the main focus was construction of an ADA compliant canopy-covered walkway on the church's South Terrace, other areas were tested to obtain subsurface information. Joan H. Geismar, Ph.D., LLC, archaeological consultant to Murphy Burnham & Buttrick (MBB), the project architects, during Stage 1 and then to Trinity Wall Street during Stage 2, directed the archaeological oversight that followed a scope of work and protocol approved by the New York City Landmarks Preservation Commission (Geismar 2018). Langan Engineers developed the construction-related plans (see Figures 8 and 16 for testing plans). Stage 1 comprised twelve field days from August 27 to September 13, 2018 and Stage 2 forty field days from March 26 to September 30, 2019. While a total of 26 test pits initially were planned, four were added or relocated, several were extended, and twenty were deepened to explore pile sites or to address construction-related issues. Also, a c. 200-ft. (61.0 m) long, basically L-shaped drainage trench was excavated south and east of the church. Long Island Concrete (LIC) hand excavated all soil that was then mainly transported in 5-gallon buckets to the archaeological crew for screening through 1/4-in. (0.6 cm) wire mesh (e.g., see Photo 1). If soil saturation and/or density made screening impossible, the soil was thoroughly troweled through. Warren George drilled a single soil boring in Stage 1.

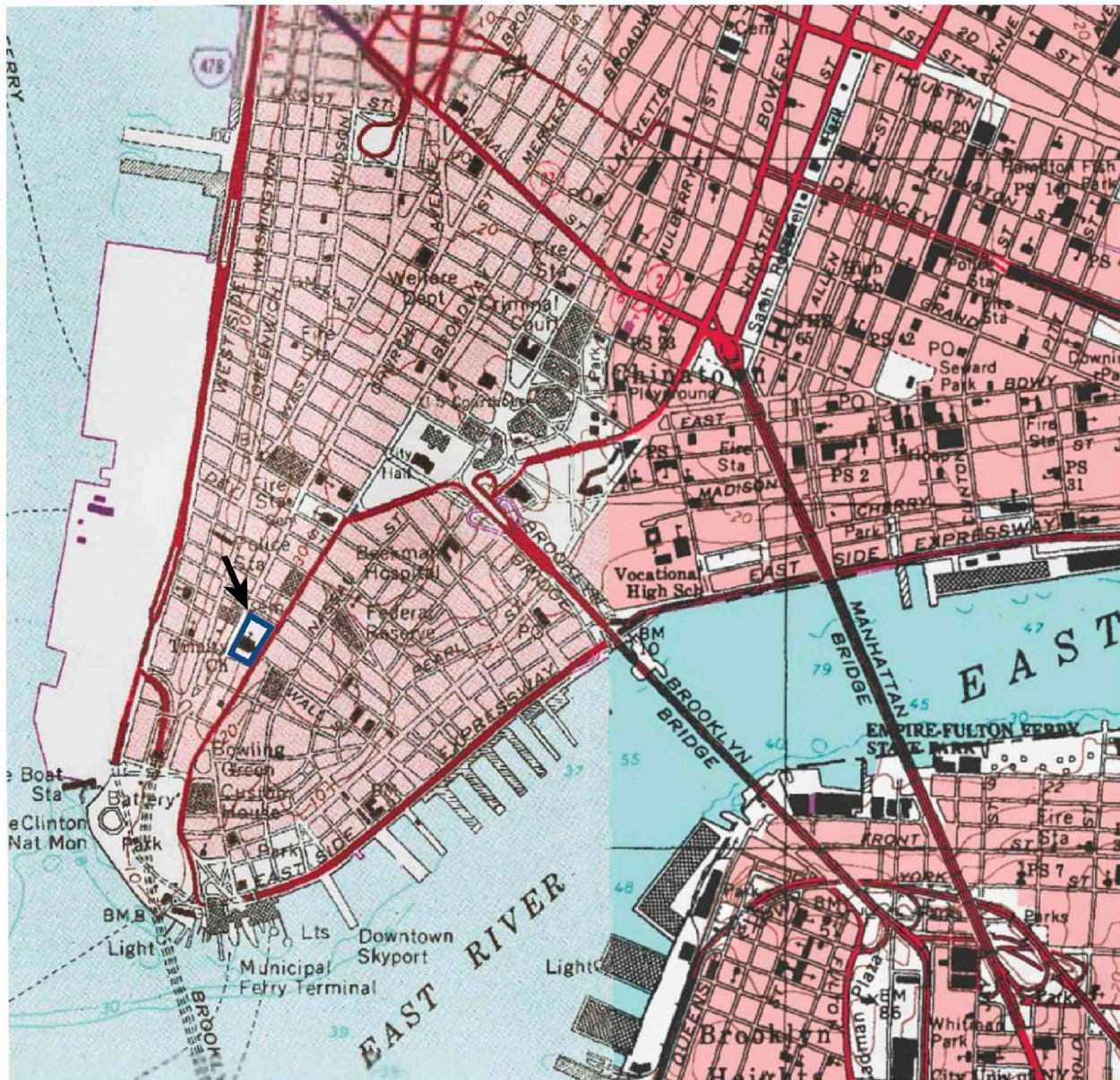
Test pits in both stages typically were 4 ft. (1.2 m) deep. However, walkway related mini-pile locations (hereafter, "pile" sites) in Stage 2 were then extended within the excavated test pits to between 8.2 and 10 ft. (2.5 and 3.1 m) below the ground surface (BGS), the estimated depth of potential concern. The drainage trench in Stage 2 was 1.5 to 3 ft. (0.5 to 0.9 m) deep. The established field protocol, which focused on burials and human remains, called for documentation of any encountered burials *in situ* and, if possible, leaving them in place, with isolated (scattered) human bone collected for on-site analysis. The church intends to provide all collected human remains a proper and respectful churchyard burial.



**Photo 1.** Screening soil from TP 9 near the southwest corner of Trinity's south churchyard during Stage 1. Here an LIC crewmember (left) is transporting a bucket of excavated soil to archaeologists for screening (J. Geismar 8/27/18)

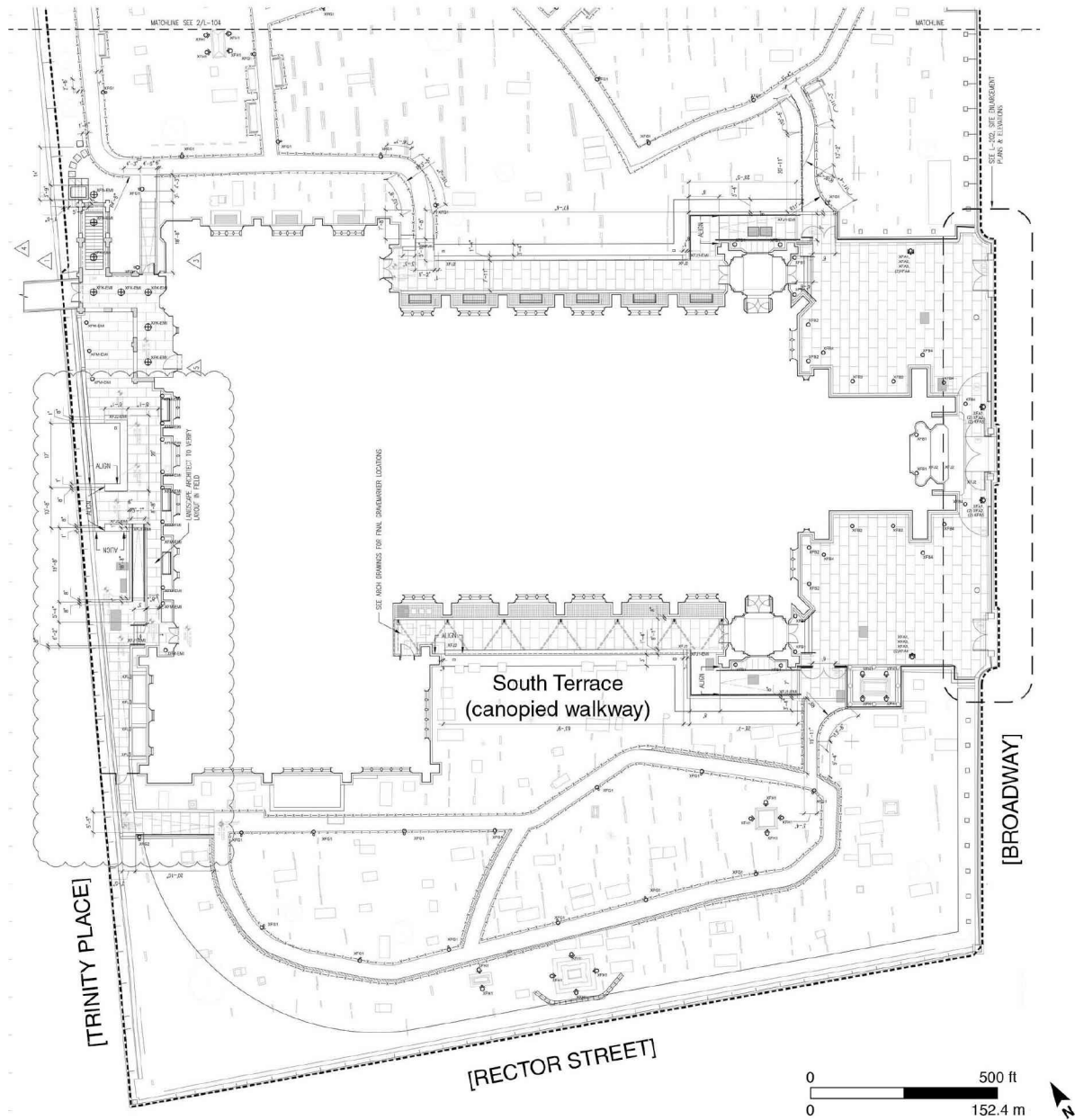
<sup>1</sup> A second construction phase (Phase 2) is planned west and north of the church.





project location







One goal was to locate and confirm the presence and depth of known or assumed 18<sup>th</sup> and early-19<sup>th</sup> century burial vaults, such as two in the south churchyard indicated on a project-related Ground Penetrating Radar (GPR) survey carried out before testing began (Figure 3). Another goal during Stage 1 was to assess the condition and/or depth of the south churchyard's perimeter wall. During this first stage, a deeply buried drain was located and documented on the north side of the church and conditions were explored in the vicinity of a pile cap associated with the church's Manning Wing. As noted, with few exceptions, the soil was screened through 1/4-inch (0.6 cm) wire mesh before removal from the site (TP LB-1 was an example of screening hampered by soil density and saturation). Highly fragmented artifacts of mixed age indicative of redeposited fill were noted in all test pits and in some instances photographed (e.g., Photo 2). However, none were collected for processing.<sup>2</sup>



**Photo 2.** Selected fill artifacts from TP 7 typical of those found throughout the excavations. (J. Geismar 9/6/18)

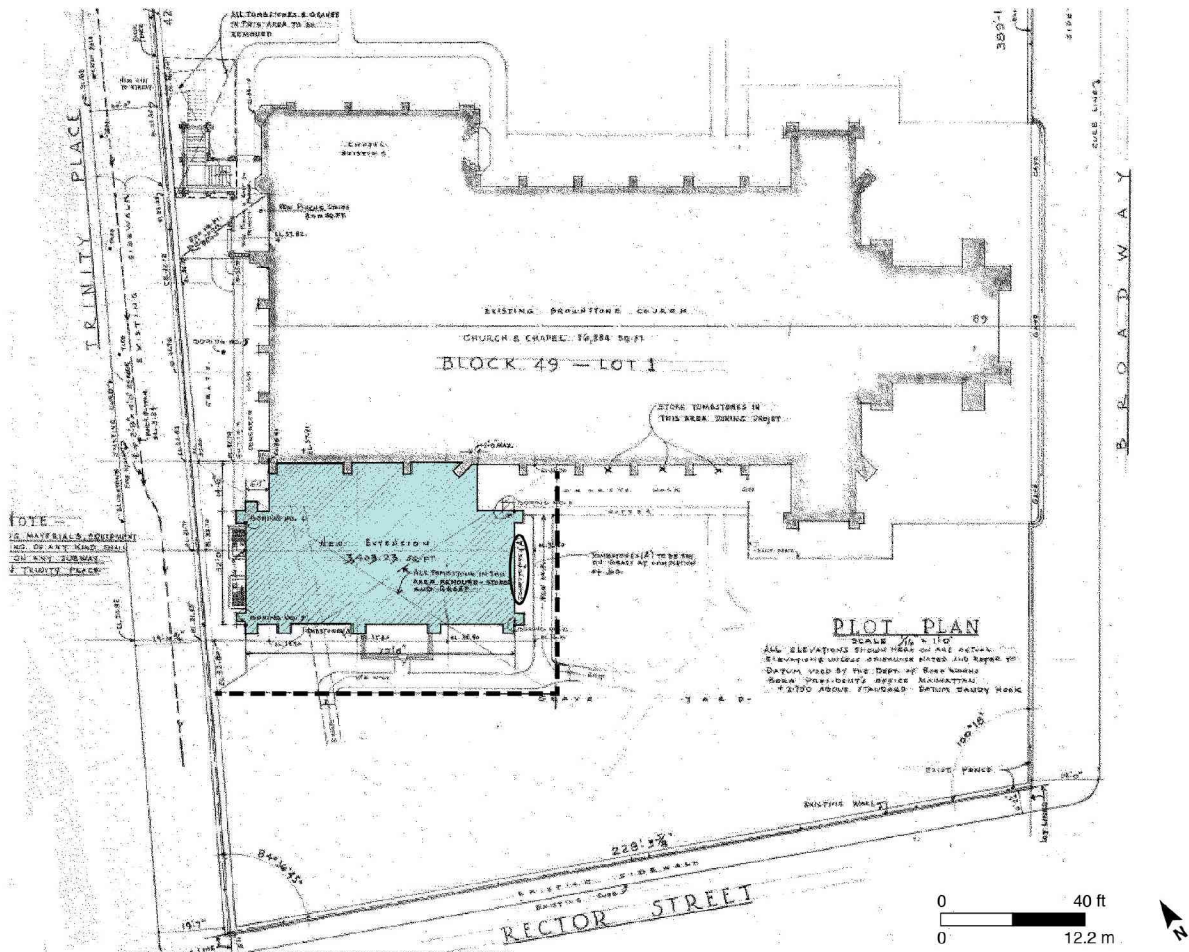
While the history of the north churchyard extends back to the mid 17<sup>th</sup> century (see below), the south churchyard was not active until sometime after the turn of the 18<sup>th</sup> century. If an *in situ* burial was encountered, it was to be avoided. However, if avoidance was not possible, at the church's direction, the project bioarchaeologist was to excavate and record the burial followed by respectful reburial by the church. All collected human remains were subject to on-site analysis prior to reburial. Throughout, all involved, especially Anthony Turturro, Mike Pombo, and Chris Xanthis, all Sciame Construction Managers, and The Rev. Bruce W. B. Jenneker and Scott Smith, Head Sacristan, among the church's ecclesiastical and lay personnel, were very supportive as was Luke S. Johns, Trinity Wall Street's Senior Construction Project Manager. During both oversight stages, the LIC foremen and crew were cooperative and supportive, as were Jeff Murphy, Zach Poole, and Katherine Malishewsky of MBB Architects among others not named here.

What follows is a brief history of the church and burial ground and the method and findings of Stage 1 and 2 archaeological oversight. This included test pits, pile sites, drainage trenches, and various other subsurface explorations. Only in TP LB-1, the location chosen for a soil boring in Stage 1, was a burial encountered. TP LB-1 was situated outside the southeast corner of the Manning Wing, a mid-1960s addition on the south side of the church. The TP was selected based on a plan in Trinity's archives that placed it within the 1963 construction zone (Adams & Woodbridge 1963; Figure 4). At the time, headstones were removed to accommodate construction and then replaced, albeit in a somewhat random order (see Photo 3 associated with Figure 4). Although construction related disturbance was suggested, the partially disturbed burial of an infant was encountered in the test pit (see below and Appendix A). Natural soil may have been reached just below the burial, but was definitely encountered 7.0 ft (2.1 m) below the ground surface (BGS). During Stage 2, natural soil was again reached, both during a pile site test and in a deep soil test required by the Building Department. All other excavations were in redeposited fill, even at deep pile site locations.

<sup>2</sup> An exception was selected samples retained for teaching purposes in a college classroom.







- new Manning Wing
- Manning Wing construction zone
- tombstones to be removed

**Photo 3.** The four tombstones in the foreground, originally situated within the 1963 Manning Wing construction zone, were removed and then replaced, but not in their pre-construction order. For example, "No. 26" was originally to the left (Trinity Sketch, ND; not illustrated). (J. Geismar 4/18/18)

## TRINITY CHURCH AND ITS CHURCHYARD

The present Trinity Church, completed in 1846, is the third church edifice located on the site, each one larger than the one before. The first church was erected by the Episcopal Parish in New York after its founding in 1697. This structure burned during the “great fire” of 1776, and structural weaknesses necessitated razing the second church in 1839 (LPC 1966). Based on historical information, the north cemetery apparently was active as a city cemetery before the Episcopal Parish was established (e.g., Bridgeman and Morehouse 1898:421), possibly as early as the 1660s (see below).<sup>3</sup>

The oldest documented tombstone in the churchyard is that of five-year-old Richard Churcher who died in 1681. Located in the north churchyard, it offers graphic evidence of the burial ground’s pre-Trinity history (Photo 4) since his death occurred sixteen years before the Episcopal Parish received a seven-year lease for land to erect a church (Leonard 1910:166).<sup>4</sup> According to Bridgeman and Morehouse’s multiple part compilation of Trinity’s history, the “north part of Trinity churchyard was...the [City’s] old public cemetery at the date of the Dongan Charter [1686].” On April 27, 1703, the City transferred title to Trinity Church with the “obligations of burying the dead (Bridgeman & Morehouse 1906:58).<sup>5</sup> Apparently two years later, in 1705, a letters patent from Queen Anne granted the church, “known then and ever since as Trinity Church,” a large tract of land that included what was then the Queen’s Garden (Leonard 1910:166) and now in part the south churchyard. Before this, however, during the Dutch Period, it was the West India Company Garden (Stokes II 1916: Plate 87; see Figure 5). For whatever reason, the south churchyard is not depicted on a 1728 survey (Lynes 1728:Figure 6). Of note is a 1778 reference to a meeting “appropriating the churchyard south of Trinity Church for the construction of vaults for the interment of the dead, and ascertaining how much of the said ground should be used for that purpose” (Bridgeman & Morehouse 1898:421).



**Photo 4.** The 1681 gravestone of 5-year-old Richard Churcher in the north churchyard, the oldest identified Trinity tombstone. (Trinity Blog 8/5/16).

A timeline in the Trinity Wall Street Archives for the construction of walls around the churchyard indicates that wood and perhaps brick walls once surrounded the church property. However, the extant stone walls apparently were in place by 1867 (Allen 2002). The timeline lists many subsequent episodes of wall repairs but no replacements.

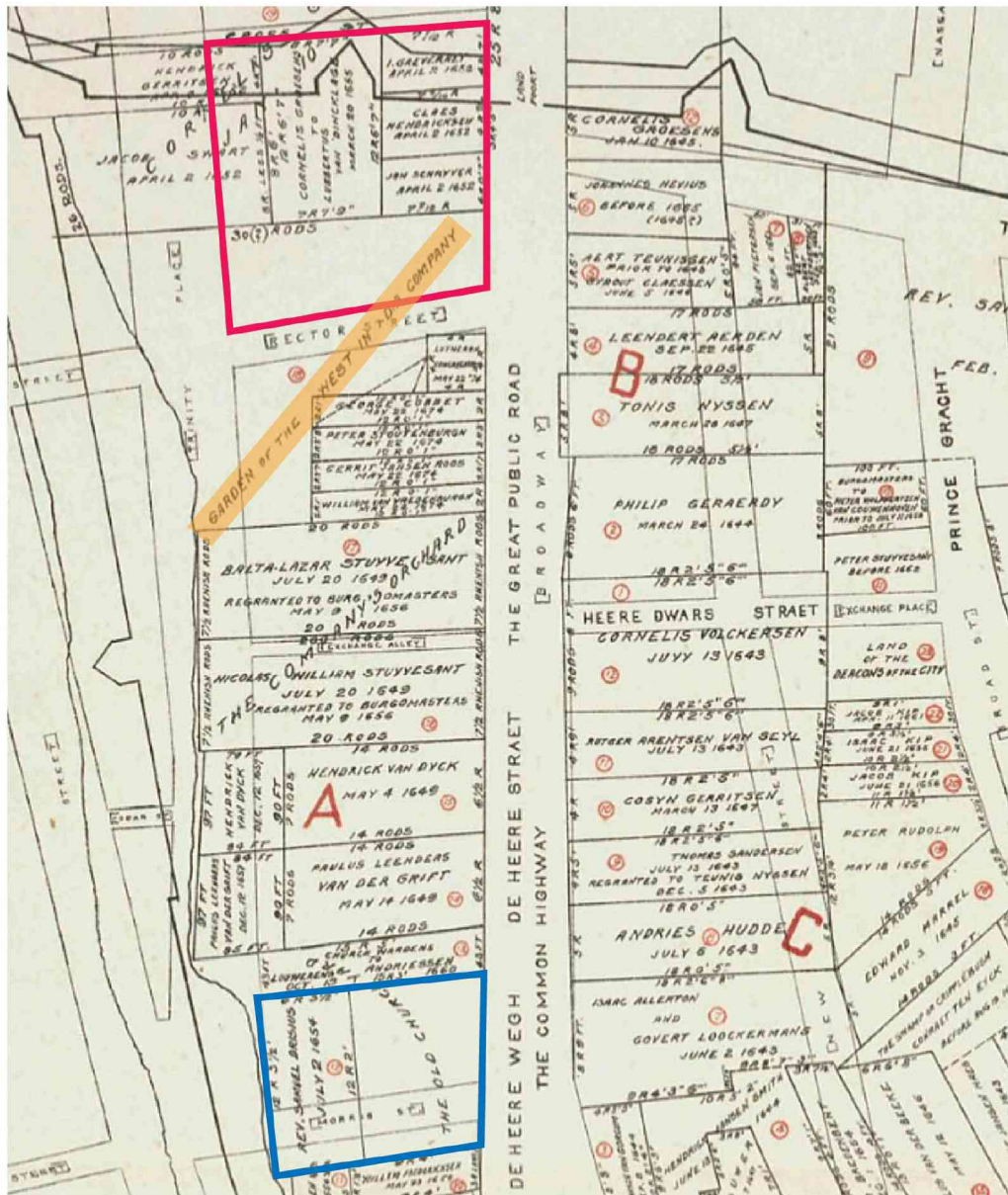
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<sup>3</sup> Another burial ground associated with a Dutch church was located in the vicinity of what is now Morris Street (e.g., Stokes Vol, II 1916:Pl 87; see Figure 5). It seems part of this burial ground was later subdivided into five 25-foot building lots where 19th-century construction encountered human remains (Valentine 1856:444-447).

<sup>4</sup> The yearly rent was 50 bushels of wheat (Leonard 1910:166).

<sup>5</sup> In Part I of their Trinity history, Bridgeman & Morehouse indicate the transfer occurred on October 19th, 1704 (1898 Part I:421); however, INP Stokes says the grant bears the date April 22, 1703 (IV 1922:443).





- Trinity Church and churchyard site
- Garden of the West India Co., later the Queen's Garden
- old Dutch Church and burial ground

no scale





Construction of the Manning Wing on the south side of the 1846 church began in 1963 (parenthetically, just about 100 years after the current perimeter wall on Rector Street was erected [Allen 2002]). Maps and photographs in Trinity's Archives document burial vaults and vault access shafts impacted by the 1960s construction (Geismar 2017:3; Figure 7 and Photo 5 this report). Pertinent to understanding the use of the churchyard was the burgeoning and unacceptable condition of burials throughout what was then the inhabited city in the first quarter of the 19th century. To remedy the situation, the City Council passed a law in 1823 that prohibited burials on the west side south of Canal Street, which included Trinity Church (south of Grand Street, this applied to the east side). While the ordinance was not immediately effective, it became mandatory in 1827 (e.g., Duffy 1968:218-222). Consequently, with the exception of ten new vaults in the northwest corner of the north churchyard to receive the remains from established vaults impacted by construction of the Manning Wing, it is assumed that no burial vaults or graves were introduced after 1827 (Joseph Lapinski, Trinity Church Archivist; personal communication 2017). However, it became apparent, and it certainly is not surprising, that the grounds of Trinity Church have been subject to extensive disturbance over time. This involved modifications such as the introduction of utilities, drainage, and perimeter walls as well as building expansion and renovation that continue to make and keep Trinity Church a viable and vital institution. Its current and extensive reconstruction has continued this tradition of improvement and beautification.

## INFANT BURIAL

As noted, the remains of an infant were encountered in TP LB-1 during Stage 1 while excavating the test pit intended to clear a site for a soil boring. The burial was found in proximity to the southeast corner of the Manning Wing at the same depth as the building's corner stone. Its location at or just below the intersection of fill suggests it may have been relocated when the Manning Wing was erected (as mentioned, natural soil was found directly below the burial). There was no indication of a marker, burial shaft, or coffin to alert the excavators to its presence. It was instead first suggested by bone fragments recovered during attempts at screening, in this case in soil so dense and saturated it could not be sifted but instead required intensive troweling.<sup>6</sup> Unfortunately, the soil's condition hampered identification of the bone material as part of a possibly *in situ* burial. Matthew Brown, the project Bioarchaeologist, assisted by Cory Look, excavated the *in situ* portion of the burial and, with Zach Williams, recorded and analyzed the recovered remains. The church will respectfully reinter these remains elsewhere in the cemetery.

Following the established protocol, recording and analysis of the find was conducted in the Manning Wing that had been gutted in anticipation of renovation. Consequently, it should be noted that conditions were not optimal for the analysis (for example, lighting was an issue [see Photo 6] and comparative material was unavailable). However, the analysis, which was successfully completed (see Photo 7 for a spatial reconstruction of the remains—also shown and identified in Appendix A—determined that the infant burial comprised 94 of the 255 human bones recovered during Stages 1 and 2, or 37 % of the entire assemblage. The analysis and its findings are presented in Appendix A.

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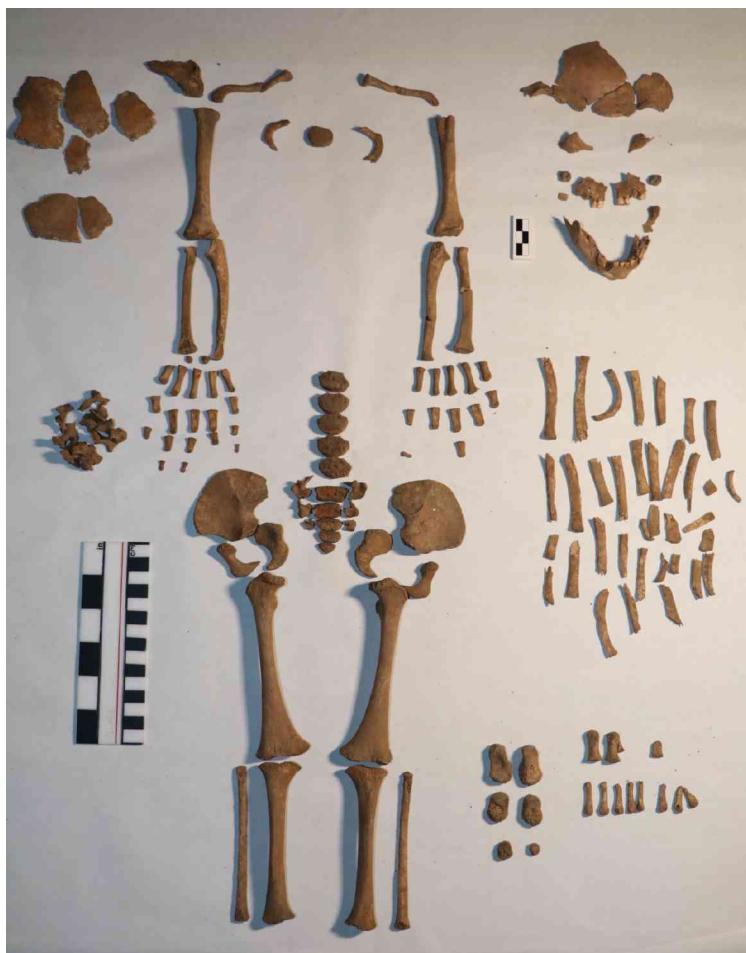
<sup>6</sup> Two corroded nails in a vertical position in association with the *in situ* burial suggest the possibility of a wooden coffin although there was no evidence of decayed wood.







**Photo 6.** Matt Brown, the project bioarchaeologist, identifying and cataloging the infant remains from TP LB-1. (J Geismar 9/17/18).



**Photo 7.** Spatial reconstruction of the infant remains recovered from TP LB-1 (M. Brown 9/21/18). The church will reinter these and all collected human remains with an appropriate and respectful ceremony.

## STAGE 1 ARCHAEOLOGICAL OVERSIGHT

Excavations during Stage 1a archaeological oversight comprised eleven test pits (see Figure 8) with the findings presented in nine test pit reports. The presented information incorporates drawings provided in Langan's Geotechnical report (Langan 2018b).<sup>7</sup>

The testing program was projected to take eleven days with time estimated for each excavation (see Figure 8). While it did, indeed, take eleven days, additional time was expended at TP 9, that is, TP 9 EXT, and TP 9A, where unanticipated conditions (apparently undocumented drainage features) and great depth (to 11.9 ft. [3.6 m] BGS in TP 9A) were issues. The depth of TP 9A required the sequential introduction of lagging to successfully complete the excavation and to facilitate safe recovery of information related to the condition of the south churchyard's perimeter stone wall on Rector Street (actually a double wall). It also required extending the original test pit (TP 9 to TP 9 EXT) and ultimately its relocation (TP 9A). In all, excavating TP 9, TP 9 Ext., and TP 9A took five rather than the projected three days. However, several other test pits required less time than anticipated (see Figure 8 and below). The test pit information is presented sequentially by number rather than by date.

With the exception of TP LB-1, all excavated soil was screened (two screens were in use). At TP LB-1, as noted, the soil density and saturation made it necessary to trowel the soil through the screen. On the day a posthole digger and hand auger were used to recover soil samples, heavy rain made screening of any kind impossible and the soil was troweled through as it was retrieved.

It should be noted only selected plan views and/or profiles are provided with the following test pit descriptions since, with the exception of TP LB-1, the soil throughout proved to be redeposited fill. As mentioned, in TP LB-1, natural soil was encountered at or just below 3.2 feet (1.0 m) of fill.

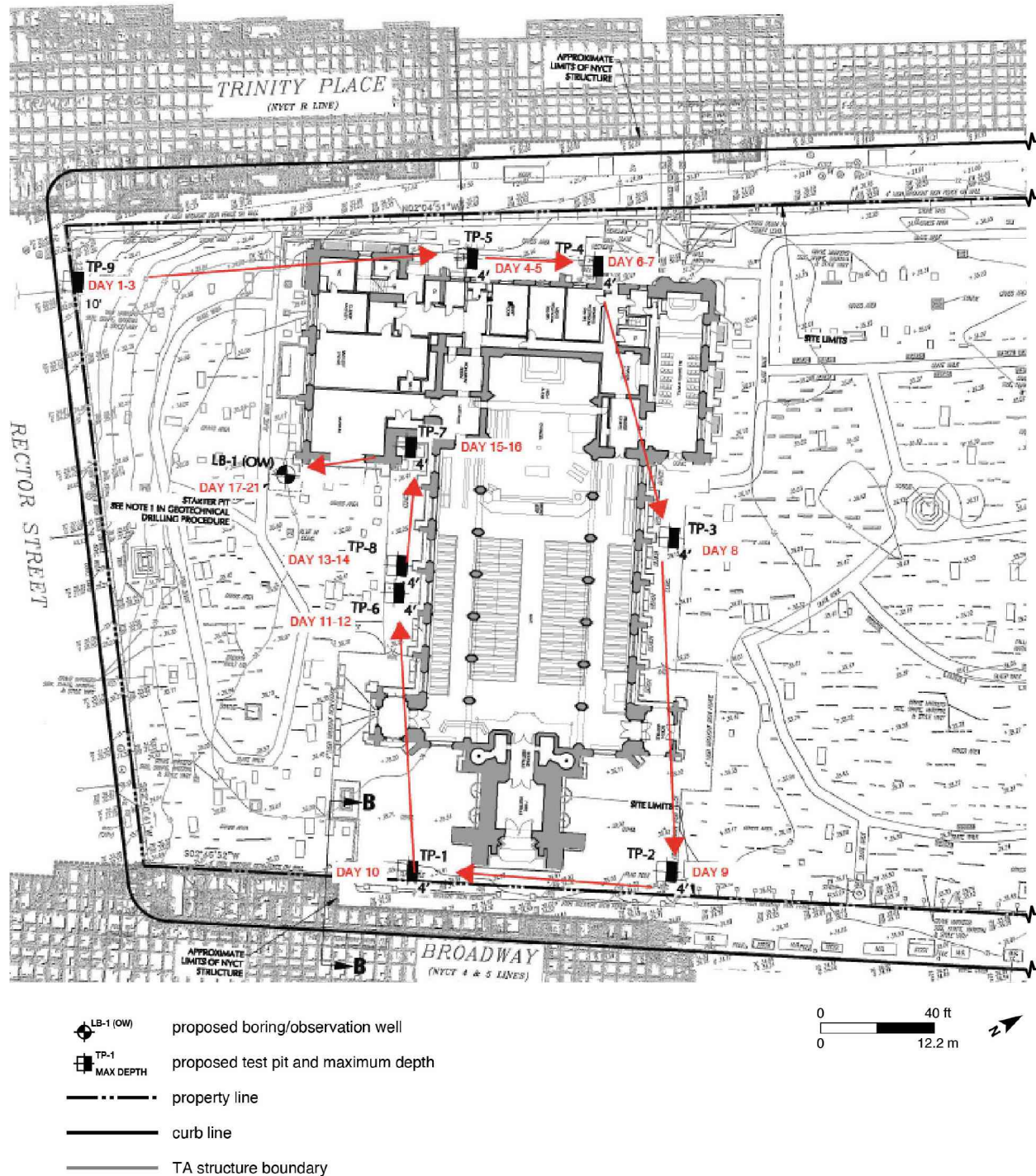
To limit excavation in a densely populated burial ground where burial sites are an unknown and where the goal was to identify a site for a 0.2 ft. (0.01 m) diameter soil boring, the project bioarchaeologist excavated a ca. 1.8 by 1.8-ft. (0.6 by 0.6-m) shovel test below the burial level (Photo 8). This determined that clean soil, which later proved to be natural, had been encountered under fill. Three days later, the site was cleared for the boring when drillers, using a posthole digger and then a hand auger, extended the initial shovel test to 8.5 ft. (2.6 m) BGS without encountering a burial or human remains and confirmed that natural soil had been reached.



**Photo 8.** Shovel test in TP LB-1 (left arrow). The view is north. The right arrow indicates where the *in situ* remains of an infant had been excavated (J. Geismar 9/7/18)

<sup>7</sup> TP 9, TP 9 EXT and 9A are reported as one unit.





## STAGE 1 TEST PITS

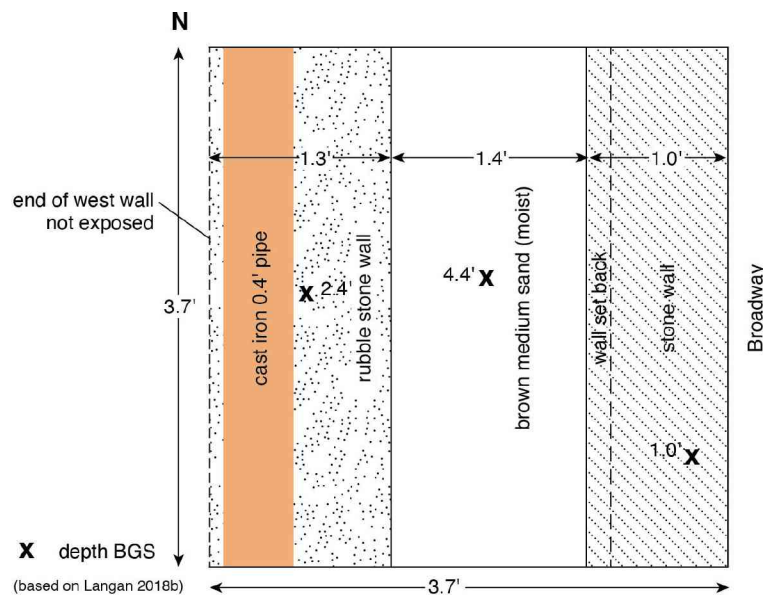
**TP 1**    **Date:** 9/5/18    **Conditions:** Hot, humid

**Location:** N of Trinity Church entrance on Broadway

**Purpose:** To locate bottom and footings of stone wall on Broadway

**Dimensions:** L 4.0 ft. (1.2 m) E/W    W 3.7 ft. (1.1 m) N/S    D 4.4 ft. (1.3 m)

**Description:** A slag layer under concrete paving was the same found elsewhere. Bird bones were found at the soil/slag interface; no human remains. A poorly made stone wall with cast-iron pipe above was exposed 1.4 ft. (0.4 m) W of the Broadway wall and was taken to depth of c.1.3 ft. (0.4 m) BGS]. Fill documented throughout.



**Figure 9.** TP 1 Schematic Plan



**Photo 9.** TP 1 after excavation. The view is east with the Broadway wall behind the protective plywood seen in the upper left corner of the photo. (J. Geismar 9/5/18)



## TP 2

**Date:** 9/4/18     **Conditions:** Hot, humid, sunny

**Location:** S of Trinity Church entrance on Broadway

**Purpose:** To determine depth and condition of stone wall footing

**Dimensions:** L 3.7 ft. (1.1 m) E/W    W 4.0 ft. (1.2 m) N/S    D 3.2 ft. (1.0 m)

**Description:** Very dark fill soils c 0.5 ft. (0.2 m), glass frags. Brown/grey soils (10YR 3/2) under top layer. Some slag. Brick frag at c 2.0 ft. (0.6 m) in front of W wall. A distance of 4.0 ft. (1.2 m) from top of the wall to footing was exposed. Dressed stone debris, running E/W, in N corner of pit c 1.0 ft. BGS (0.3 m) topped by iron with cement dripped over the stone (?). Fill; includes some brick, shell and animal bone frags; teeth frags from a large mammal; no human remains. Fill throughout.



**Photo 10.** TP 2 located north of the church entrance. The view is east toward Broadway. The protective plywood in the upper background sits on the stone wall that serves as a base for the iron fence on Broadway (J. Geismar 9/4/18)



**TP 3    Date:** 9/13/18    **Conditions:** Hot, cloudy, humid

**Location:** Adjacent to N side of Church building E of All Souls Chapel

**Purpose:** To determine location and configuration of pipe

**Dimensions:** L 4.0 ft. (1.2 m) E/W    W 4.0 ft. (1.2 m) N/S extension 2.7 ft. (0.8 m)    D 3.4 ft. (1.0 m)  
Extension 5.3 ft. (1.6 m)

**Description:** First 0.25 ft. (0.08 m) was concrete paving over 1.25 ft. (0.4 m) of typical ash fill containing brick, shell, animal bones and corroded nails. At 1.5 ft. (0.5 m) BGS, it changed to sandy soil, still some brick frags c 2.3 ft. (0.7 m) in NW corner. Human bone frags along with clamshell, small ceramic frags, mortar, brick, terra-cotta pipe frags, unburned coal and slag, highly corroded nail, charcoal. Isolated human ulna and mandible at c 2.75 ft. (0.8 m) BGS. Bottle glass frags c 3 ft. (0.9 m). Cast -iron drain pipe exposed at 3 ft. (0.9 m) running N/S across pit 1.4 ft. (0.4 m) from W side of pit. Extended pit to determine configuration 2.7 ft. (0.8 m) to S. Human mandible in ash fill at c 3.2 ft. (1.0 m) BGS in center of extension. Much human bone at c 3.3 ft. (1.0 m) in SW half of extension; also animal bone (*rattus rattus*) and shell frags. Human remains possibly reflect disturbance from walkway and/or other construction episodes. Iron drain system is 0.66 ft. (0.2 m) diameter, upper pipe 3.7 ft. (1.1 m) BGS; top of lower pipe 5.0 ft. (1.5 m) BGS. Entire excavation in fill.



**Photo 11.** Screens at rest in the vicinity of TP 3. Screened soil from TP 3 lies under and around the screens. The view is northwest with Trinity Place in the background. (J. Geismar 9/13/18)



**Photo 12.** A network of relatively recent drain pipes, the sought after utilities, exposed in TP 3 on the south side of the church. Note a partially exposed deep pipe segment (arrow) to the right (J. Geismar 9/13/18)

**TP No: 4**    **Date:** 8/31/18    **Conditions:** Cloudy, rain

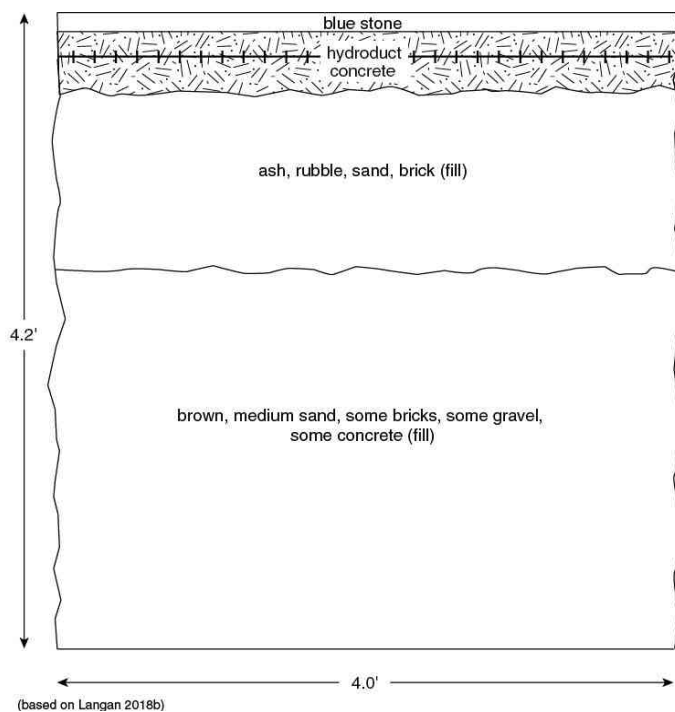
**Location:** Adjacent to rear wall of Trinity Church facing Trinity Place

**Purpose:** Possible vault location

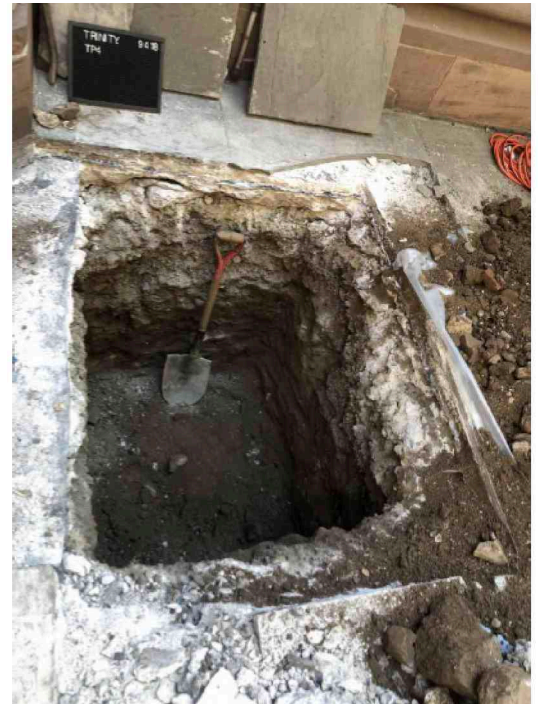
**Description:** TP only partially exposed; excavation continued on 9/4/18  
(continued)    **Date:** 9/4/18    **Conditions:** Hot, sunny, humid

**Dimensions:** L 4.0 ft. (1.2 m) E/W    W 4.0 ft. (1.2 m) N/S    D 4.0 ft. (1.2 m)

**Description:** Paving stone removed. Excavation to 4.2 ft. (1.3 m) indicated fill throughout. Brick and terra-cotta frags, corroded nails, oyster shell. No vault was encountered.



**Figure 10.** TP 4 Schematic East Wall Profile



**Photo 13.** TP 4 looking east toward the back wall of Trinity Church. Soils comprised fill throughout the 4.0-foot (1.2-m) deep excavation where there was no evidence of a vault or vault access. (Langan 2018b). (J. Geismar 8/31/18)

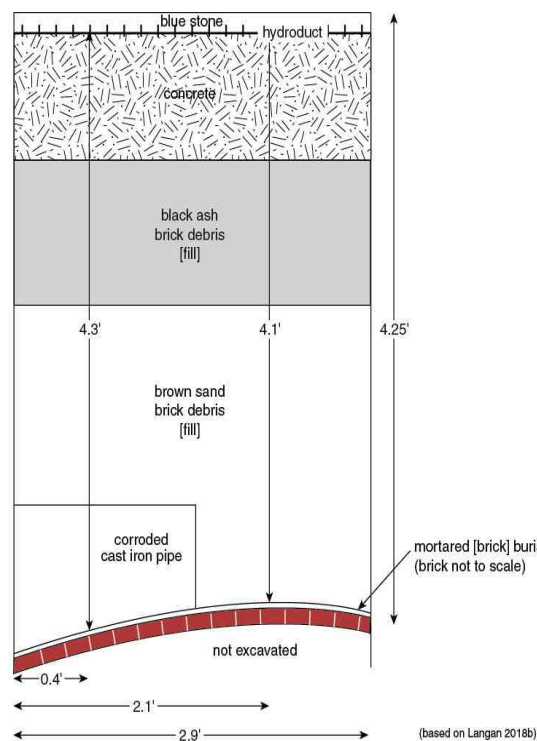
**TP 5 Date:** 8/30/18 – 8/31/18      **Conditions:** Fair, relatively cool

**Location:** Adjacent to rear wall of Trinity Church

**Purpose:** Possible vault location

**Dimensions:** L 3.75 ft. (1.1 m) E/W    W c. 4.0 ft. (1.2 m) N/S    D c. 4.3 ft. (1.3 m)

**Description:** A blue stone walk and waterproofing was removed with a Jackhammer exposing an ashy fill followed by very compacted ashy fill soil (7.5 YR 3/4 dark brown) that contained slag, terra-cotta frags, a possible stone vault cover frag (no inscription), and one possible human bone frag. Also a great deal of oyster shell and small glass, brick, mortar, and ceramic frags, corroded metal (nail?). A human finger digit at 3.8 ft. (1.2 m) BGS in fill. A corroded cast-iron pipe extended across the top of the arched brick vault 4.0 ft. (1.2 m) BGS while a larger (0.6 ft. [0.2 m] diameter) pipe was exposed in the pit's NW corner ca. 3.ft. (1.1 m) BGS.



**Figure 11.** TP 5 Schematic East Wall Profile



**Photo 14.** Top of a brick burial vault exposed in TP 5. The view is east looking toward the exterior rear wall of the church. Corroded cast-iron pipes were also exposed (see below). (J. Geismar 8/31/18)



**Photo 15.** A corroded cast-iron pipe lays across the top of the exposed brick burial vault in TP 5. Another pipe (arrow) is visible in the west wall (J. Geismar 8/31/18)

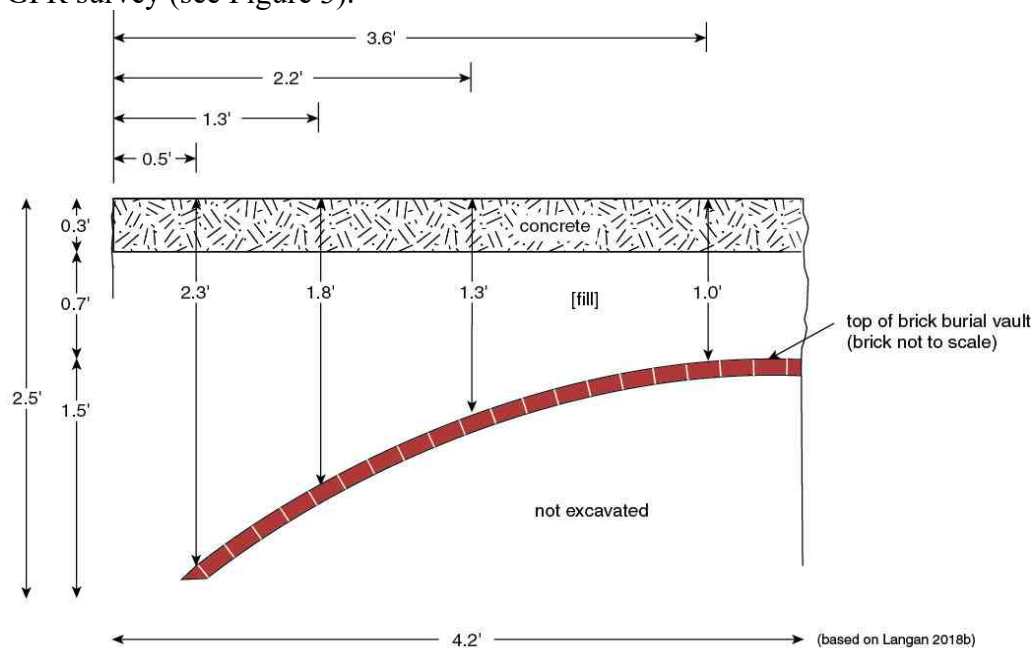


**TP 6**    **Date:** 9/5/18    **Conditions:** Hot, sunny, humid, shady in morning

**Location:** Adjacent to S wall of Trinity Church facing Rector Street

**Purpose:** Anticipated vault location based on GPR survey    **Dimensions:** **L** 4.2 ft. (1.3 m) E/W  
**W** 3.0 ft. (0.9 m) N/S    **D** 2.4 (0.7 m)

**Description:** Surface stone paving removed followed by 0.9 ft. (0.3 m) to 1.1 ft. (0.3 m) of slag, then dark yellow brown soils. Bone frags in NW corner collected for ID. Many corroded nails in upper level of brown mix. Mortar, stone, brick frags, and unidentified bone (latter collected). The burial vault, at 1.1 ft. (0.3 m) BGS, is considerably vault was shallower than indicated by the GPR survey (see Figure 3).



**Figure 12.** TP 6 East Wall Schematic Profile



**Photo 16.** Top of brick vault in TP 6 looking east toward the exterior rear wall of Trinity Church. The GPR survey indicated the vault was 3.0 ft. (0.9 m) BGS (see Figure 3). However, it proved to be only c. 1.0 ft. BGS (0.3 m) BGS. (J. Geismar 9/5/18)

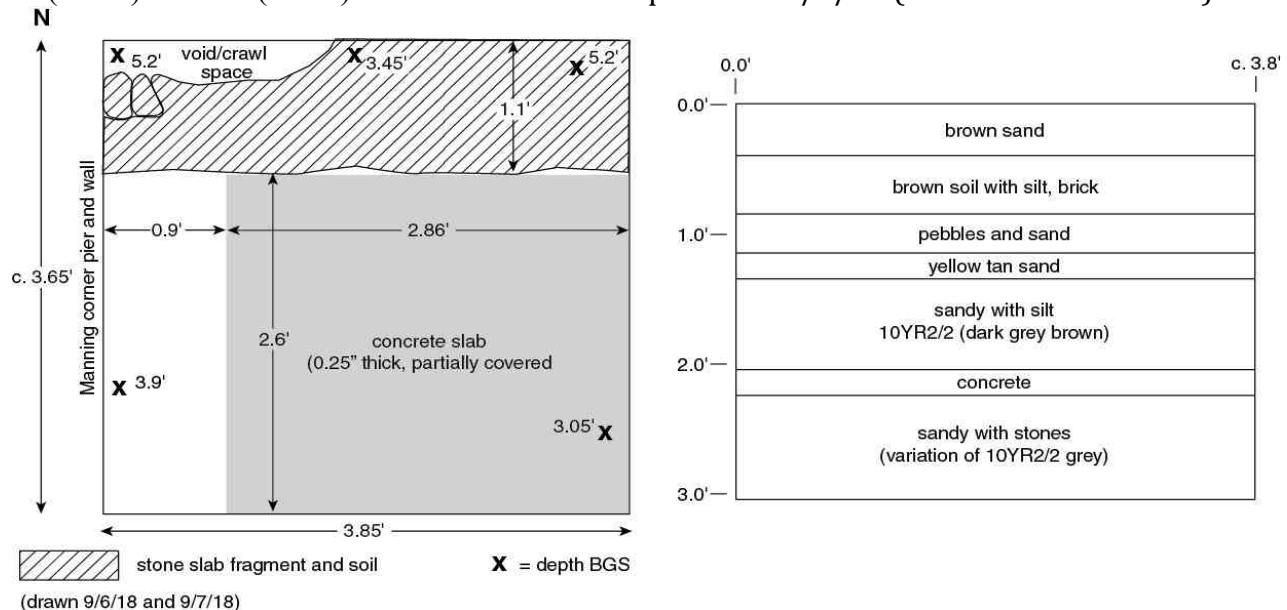
**TP 7    Date:** 9/6/18 -9/7/18    **Conditions:** Hot, humid, cloudy

**Location:** Exterior NE corner of Manning Wing

**Purpose:** To assess subsurface conditions on N side of Manning Wing

**Dimensions:** L 3.8 ft. (1.2 m) E/W    W 3.6 ft. (1.1m) N/S    D 5.2 ft. (1.6 m) in NE corner

**Description:** Stony dense fill throughout. Brick and plastic frags and one plastic coffee cup lid 1.7 ft. (0.5 m) BGS and another at 2.5 ft. (0.8 m) BGS. Fill material at 2.0 ft. (0.6 m) BGS includes a shell, unburned coal, and a penny but no identifiable bone to this depth that included lumps of densely packed stony soil. Stone slab in NW corner at 3.3 ft. (1.0 m) BGS. Slab is 3.0 ft. (0.9 m) x 3.3 ft. (1.1 m). TP 7 excavation completed on 9/7/18 (see Photos 17 and 18)



(drawn 9/6/18 and 9/7/18)

**Figure 13. TP 7 Schematic Plan Profile**

**Figure 14. TP 7 Schematic West Wall**



**Photo 17.**  
(left) View of  
exposed west  
wall of TP 7.  
(J. Geismar  
9/7/18)



**Photo 18.**  
(right) View of  
the exposed  
east TP 7 wall.  
(J. Geismar  
9/7/18)

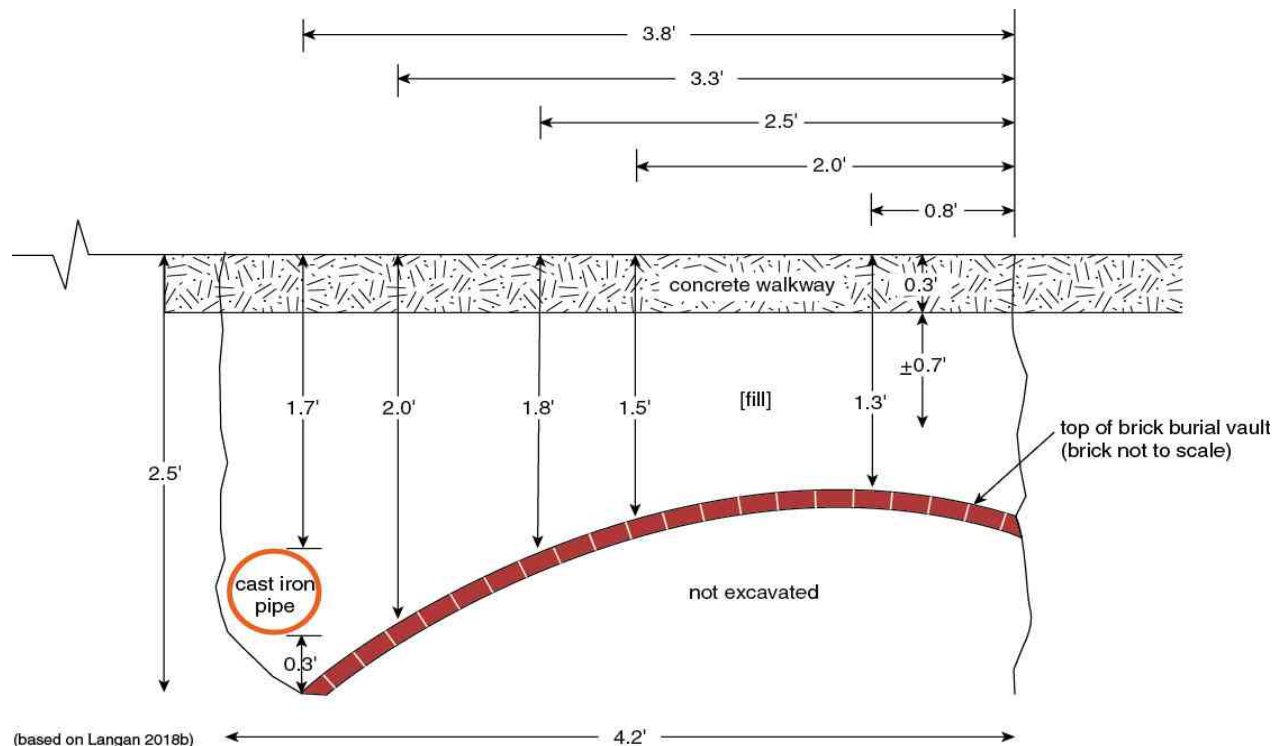
**TP 8 Date:** 9/5/18 **Conditions:** Hot, humid, sunny

**Location:** Adjacent to S wall of Trinity Church facing Rector Street

**Purpose:** Anticipated vault location based on GPR survey

**Dimensions:** L 4.2 ft. (1.3 m) E/W W 3.4 ft. (1.0 m) N/S D 2.1 ft. (0.6 m)

**Description:** Ash and slag to 1.5 ft. (0.5 m). Fill included shell, brick, and stones. Drain pipe (cast-iron) along west edge of pit and vault. Vault reached at 1.9 ft. (0.6 m) BGS, but highest point (apex) actually 1.4 ft. (0.4 m) BGS, shallower than indicated by GPR. No bone material noted. Soil brown (10YR 3/3).



**Figure 15.** TP 8 East Wall Schematic Profile



**Photo 19.** TP 8 view north toward the exterior south wall of the church. The exposed vault was considerably shallower than anticipated based on the GPR survey (see Figure 3): 2.5 (0.8 m) BGS on the survey while actually c.1.4 ft. (0.4 m) BGS, slightly higher than highest measurement indicated on the schematic profile. (J. Geismar 9/5/18),



**TP 9 Date:** 8/27/18 - 8/31/18\* **Conditions:** Hot, humid, sunny all 6 days of excavation

**Location:** N side of perimeter wall on Rector Street near Trinity Place

**Purpose:** To determine depth and condition of the S perimeter wall and footing

**Dimensions:** L variable: 4.0 (1.2 m) to 6.0 ft. (1.8 m) E/W W variable: 3.5 ft. (1.1 m) to 4.8 ft. (1.5 m) N/S D 2.0 ft. (5m) to 11.9 ft. (3.6 m)

**Description: 8/27/18** Top soil followed by redeposited fill (glass, corroded metals, clinkers, coal, butchered animal bone, etc.) Irrigation pipe in NE corner of pit c 0.5 ft. (0.2 m) BGS. Soil change c 1.0 ft. (0.3 m) BGS, with metal pipe (electrical conduit) and gutter in center of the pit. Brick/concrete stepped construction [initially incorrectly thought to be vault related] encountered near S wall [ultimately assumed drainage related]. An associated terra-cotta pipe found W of the brick/stone feature c 2.0 ft. (0.6 m) BGS. TP 9 was extended E (TP 9 EXT) to expedite deeper excavation. Two (2) bone frags recovered. A comparable feature in the NE corner of the extended pit with the terra-cotta pipe running along the N side. The pipe extended south to the feature encountered in the original part of the TP. Excavation again terminated at 2.0 ft. (0.6 m) BGS. Cultural material in the extended TP included a slate pencil frag, a crown cap, assorted nails, a kaolin pipe stem frag, a 22. shell casing, a Blue Transfer Print frag (willowware?), a 1978 penny, and a HUTTER bottle closure [patented 1877] “A. KRU...KER/ 512 W. 166/ 8 ST NY/ PATENT K. HUTTER”].

**8/28/18** A new TP 9 location (**TP 9A**) was established 8 ft. (2.4 m) E of extended TP 9 EXT after probing detected no impediments. Soil was dense, clayey. Fill material was comparable to the other TP 9 locations and included a possible human molar, animal bone, ceramic, glass, and oyster frags and 3 pennies (1940, 1977, and another possibly 1920’s). A concentration of isolated human bones, 2.0 ft. (0.6 m) to 4.0 ft. (1.2 m) BGS, was collected from the NW corner of the pit. No human remains were found below this point. The TP was partially shored.

**8/29/18** Lagging was introduced into TP 9A. Below 3.0 (0.9 m) BGS, it was basically a clean fill with stones of various sizes, some large. One human bone frag was recovered. Deeper soils were very wet and difficult to screen. With depth, there were more stones and few artifacts. A terra-cotta sewer pipe was encountered at 5.5 ft. (1.7 m) BGS.

**8/30/18** The introduction of lagging continued with depth. Soils adjacent to the S wall were moist, sandy, and coarse (10YR 3/4 brown). A terra-cotta pipe was exposed adjacent to the wall in a setback for the wall footing. The top of the pipe was confirmed at 5.5 ft. (1.7 m) and the top of the footing setback at 8 ft. (2.4 m) BGS. A 2.5 ft. (0.8 m) poorly made stone “pier,” rather than a footing, extended above the set back. The pier was excavated under the wall to 11.0 ft. (3.4 m) BGS. The stone pier was associated with an inner wall while the wider exterior wall continued down.

**8/31/18** Excavation around stone pier of the inner wall ended at c 11.9 ft. (3.6 m). A small kaolin pipe stem frag at 11.2 ft. (3.4 m) BGS was the only artifact noted below 5.0 ft. (1.5 m) BGS.

Therefore, a basically clean but stony fill was found from 5.0 ft. (1.5 m) to 11.9 ft. (3.6 m) BGS where the excavation terminated. Screening was continuous throughout the 5 day excavation.

**\*Note:** TP 9 was ultimately in three parts. Initially near the SW corner of the churchyard, it was extended east after a brick feature and associated terra-cotta pipes, apparently related to drainage, and electrical conduits and irrigation pipes were encountered; excavation terminated at c. 2.0 ft. (0.6 m) BGS. After components of the drainage feature were found in an extension of TP 9 (TP 9 EXT), TP 9 was relocated 8 ft. (2.4 m) further E and was successfully was taken to a depth of 11.9 ft. (3.6 m) BGS with shoring/lagging.



**Photo 20.** TP 9 and TP 9 EXT looking east. Two similar drainage features are exposed: the step-like brick construction to the right (adjacent to the Rector Street wall) with an associated cast-iron pipe and a terra-cotta pipe (left foreground) associated with a similar brick construction (only partially exposed) in the upper left corner of the pit. An irrigation pipe (far left) and a probable electrical conduit (center) complete the picture. (J. Geismar 8/27/18)



**Photo 21.** TP 9A, located adjacent to the Rector Street exterior wall and east of TP TP 9 and TP 9 EXT, near the end of excavation by LIC personnel. Lagging was introduced sequentially to shore the test Pit that ultimately extended down 11.9 ft. (3.6 m) BGS to expose the exterior wall footing and a pier-like inner wall. Scattered human remains were recovered from fill between 2.0 to 4.0 ft (0.6 to 1.2 m) BGS. (J. Geismar 8/31/18)

**TP LB-1**      **Date:** 9/6/18      **Conditions:** Hot, humid, sunny (9/6 & 9/7/18)

**Location:** S side of Trinity Church – Exterior SE corner of Manning Wing

**Purpose:** 4.0 ft. (1.2 m) Test Pit to clear location of a soil boring (see Soil Boring Log, Appendix B). Headstone were removed for Manning Wing construction in 1963 and then replaced; see Photo 3).

**Dimensions:** L 5.0 ft. (1.5 m) E/W    W 3.2 ft. (1.0 m) N/S    D 5.2 ft. (1.6 m) / 8.5 ft. (2.6 m)

**Description:** 9/6/18 Located at the SE the corner of the building, dense wet soils with stones was encountered. Fill material included oyster shell, corroded nails, glass, ceramic, and plastic frags, animal bone, and terra-cotta pipe frags. Irrigation hoses (2) were exposed, one along the W edge of the TP, the other in the E part, both in the upper 0.5 ft. (0.2 m). Soil (5YR 2.5/black) to c. 2.3 ft. (0.7 m) BGS was stony/dense. An animal bone frag and footing stones associated with the Manning Wing encountered below this level. Soil density required troweling through the wire mesh and revealed a concentration of mainly upper body, juvenile human bones and bone fragments from the E part of TP. Included were mandible frags with teeth and sundry teeth, ribs, arm, and vertebrae. The contractor halted excavation with archaeological excavation to continue the next day.

9/7/18 The E part of the TP was photographed at 2.8 ft. (0.9 m) BGS and W part at 2.9 ft. (0.9 m) BGS prior to archaeological removal of human skeletal material (authorized by the Church prior to a proper burial after ton-site study). Bricks stabilized the plywood sheathing during excavation of the remaining bones. Matt Brown, the project bioarchaeologist, assisted by Cory Look, conducted the excavation. Possible coffin nails, heavily corroded, noted perpendicular to the left and right femurs with no evidence of a coffin or burial shaft. The radii, ulna, lumbar, and metatarsals were removed to access tibia, fibula, tarsals, and metatarsals noted under the TP's south wall. The burial was in fill that terminated immediately under the *in situ* remains (small brick fragments and an oyster shell found under the vertebrae). While apparently was *in situ*, the burial seems not in its original burial site (perhaps removed intact during the 1960s construction of the Manning Wing and then reburied?). Following excavation of the burial, and to identify a location for the soil boring, a shovel test (ST) (1.0 ft. x 1.0 ft. [0.3 m x 0.3 m]) was archaeologically excavated in the SW corner of the TP from c. 3.0 ft. (0.9 m) BGS to a depth believed to be 6.0 ft. (1.8 m) BGS (see Photo 7). There was no evidence of human remains in the screened ST soil. Photos were taken and the TP protected with plywood in anticipation of using a posthole digger the next day to take the ST to 10.0 ft. (3.0 m) BGS (Photo 21). While the ST soil below the burial level differed from soil in the burial area (7.5YR 4/4 brown), it too was dense. Small shell and brick frags in the upper part of the ST indicated fill. Soil was somewhat redder and sandier with depth (5YR 4/6 yellowish red) but remained very dense.

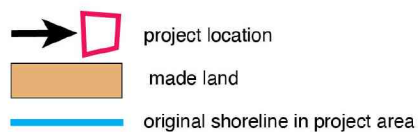
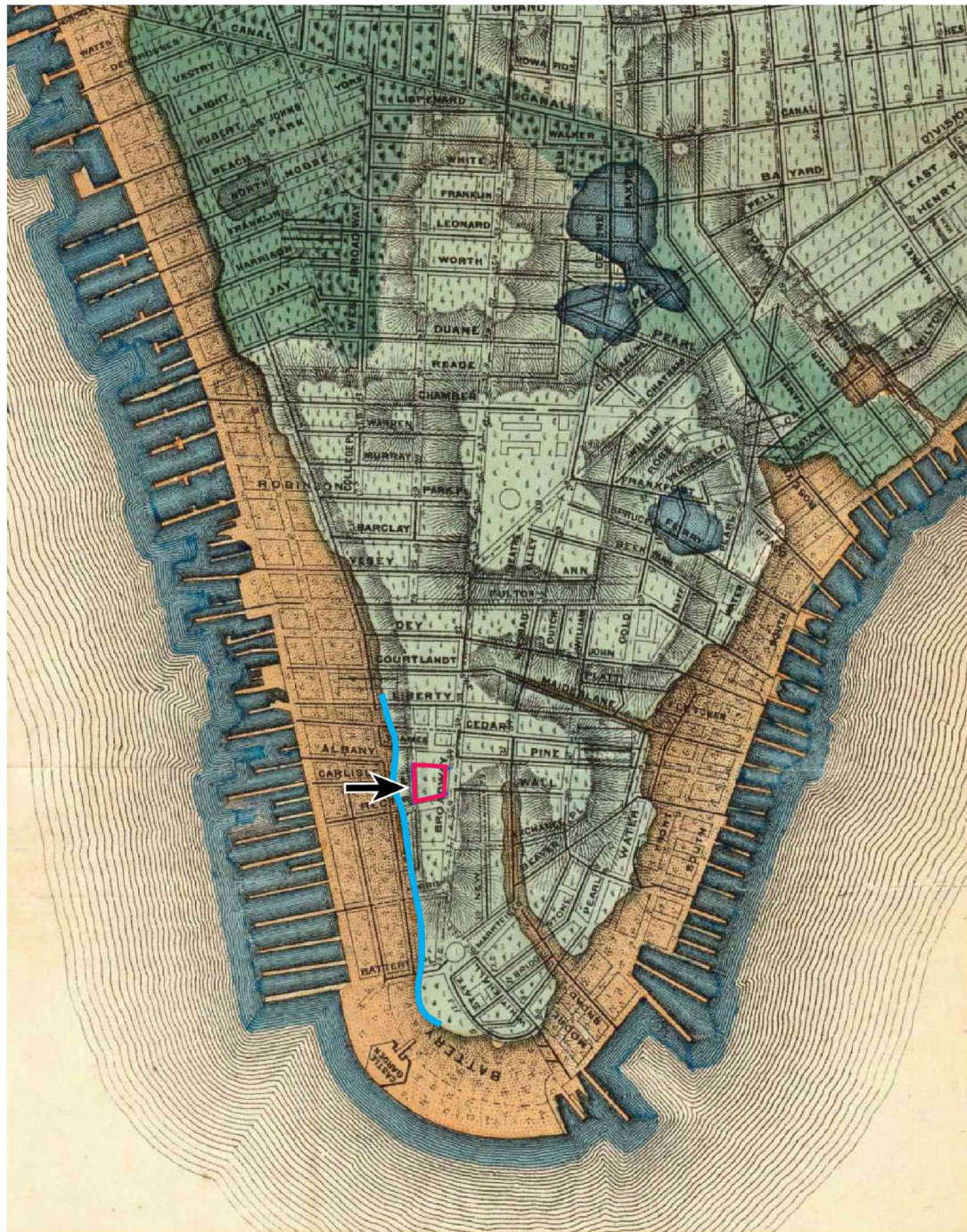
9/10/18 Raining. Difficult conditions. Drillers used a posthole digger and then a hand auger to take the ST from 5.2 ft. (1.6 m) to 8.5 ft. (2.6 m) BGS where a large rock/boulder was encountered. Dense soil made screening impossible so soil was troweled through. While there was no discernible soil change in what appeared to be clean soil, a decayed oyster shell frag was noted c 7.5 ft. (2.3 m) BGS. The soil remained consistent – sand, gravel, stones and some rocks (10YR 3/5 dark yellow brown) from 7.5 ft. (2.3 m) to 8.5 ft. (2.6 m) BGS. The deepest sample (8.0 to 8.5 ft. [2.4 m to 2.6 m]) BGS included two degraded oyster shells, seemingly of great age. A mystery. However, rather than fill artifacts, these shells and the one above apparently were associated with glacial kames (natural soil hills) once located near the Hudson River shore (Schuldenrein 2019:personal communication). This was prior to land reclamation that extended the shoreline to Washington Street in the late 18th century (see Viele 1865; Figure 16). In the 20th century, to create Battery Park City, additional land reclamation extended the shoreline further west.





**Photo 22.** TP LB-1 after excavation and removal of the *in situ* remains of the infant burial during Stage 1. The remains were removed by extending the excavation into the east wall of the pit (upper arrow). The shovel test shown in Photo 8 (see text) is covered by a muddied piece of plywood (lower arrow). The exposed plywood in the center was introduced to stabilize the saturated soil as was the “shoring” to the right (under an irrigation line). The exterior southeast corner of the Manning Wing is in the lower left corner of the photo. (J. Geismar 9/7/18)





no scale





## STAGE 2 ARCHAEOLOGICAL OVERSIGHT

Stage 2 comprised archaeological oversight of intermittent construction activities located on the south and east sides of the church. Between March 26 and September 30, 2019, sixteen planned test pits (TP), typically 4 ft. x 4 ft. x 4 ft. (1.2 m x .2 m x 1.2 m), and seventeen much deeper pile sites within each TP, were excavated in the church's South Terrace. This was in addition to ten shallow cross beam trenches, some of them deviating from the original plan to accommodate subsurface findings. All were related to an ADA compliant covered walkway, and all were within the vicinity of the south church wall (see Figure 17).<sup>8</sup> One test pit (TP 2) was revisited and extended 15 ft. (4.6m) beyond the 10 ft. (3.1 m) estimated depth of potential archaeological concern to fulfill a Building Department requirement. A double TP was added to fulfill the requirement for a pile test, and another add-on was terminated and never designated when it proved to be the location of a burial vault. In addition, a 2-ft. (0.7 m) deep, L-shaped drainage trench, approximately 200 ft. (55.0 m) long, was excavated from the south side of the church to and across the front of the building, terminating just north of the church's main entrance on Broadway (Figure 18).

As previously noted, Joan H. Geismar, Ph.D., LLC, as a consultant to Trinity Wall Street, directed Stage 2 archaeological oversight that followed the original scope of work and protocol approved by the New York City Landmarks Preservation Commission. And, again, the goal was to document any burials and to recover all isolated (scattered) human remains encountered during excavation. Long Island Concrete (LIC) again carried out all excavation by hand and the excavated soil was screened through ¼-inch (0.6 cm) wire mesh. While no burials were encountered during Stage 2 oversight, isolated and fragmentary human skeletal material and teeth were recovered. As in Stage 1, the remains were documented and analyzed on-site and will be provided a proper and respectful reburial.

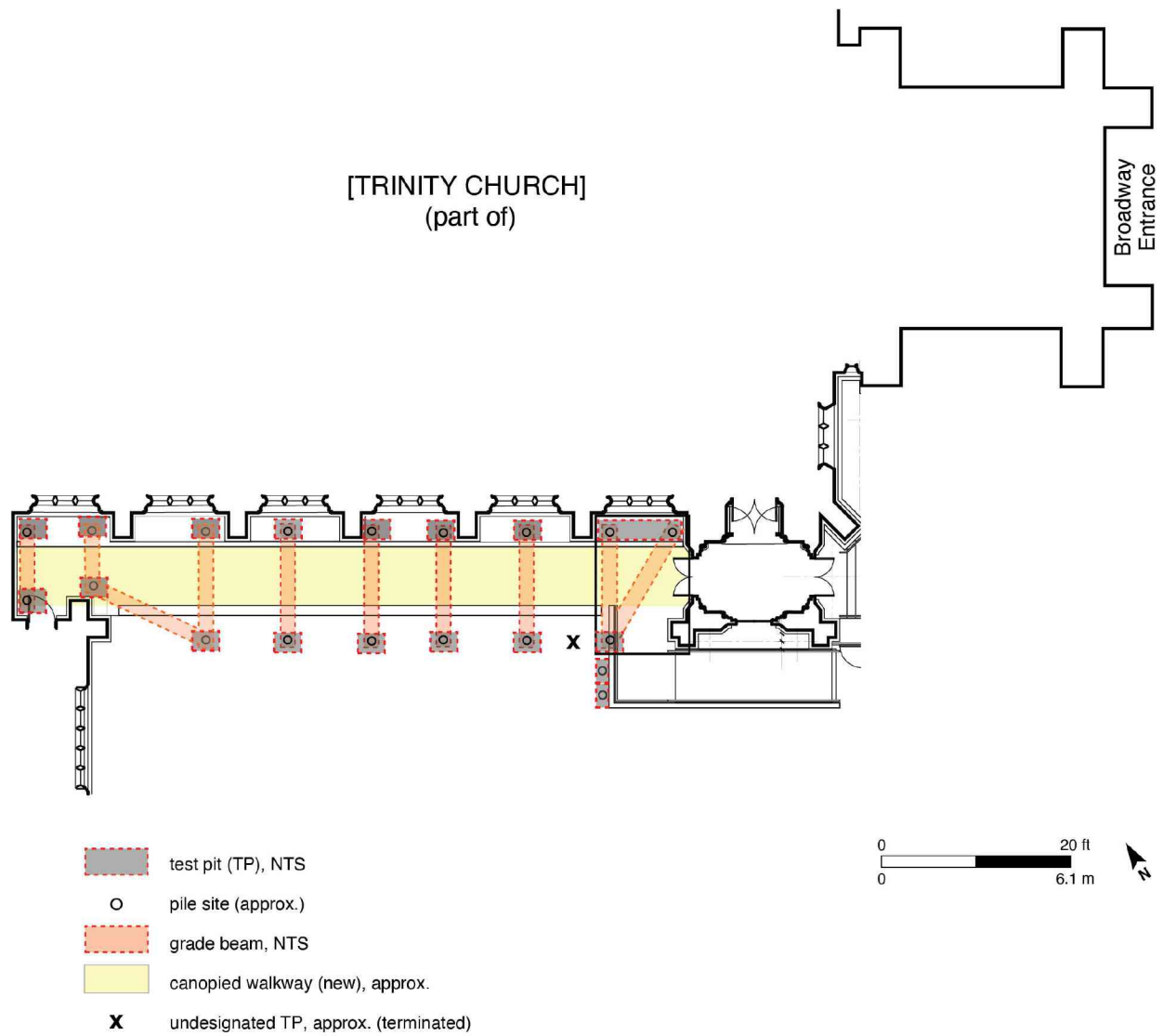
The shallow cross beams supported by deep piles required a test pit at each pile site to ensure no impact to burial vaults and unknown intact graves. The test pits mainly were in numbered pairs with north-south designations (e.g., TP 5N and TP 5S). Originally, only TP 1, 2, 3 and 10 were unpaired, but this was also true of the double TP (TP 18 and TP 19) added south of TP 2 for pile pull test required for quality control (see Figure 18).

Excavation exposed late-18<sup>th</sup>- or early-19<sup>th</sup>-century burial vaults, vault accesses, and more recent drainage lines. Planned pile sites were relocated as necessary. Multiple activities created a very busy site (for example, see Photo 23).



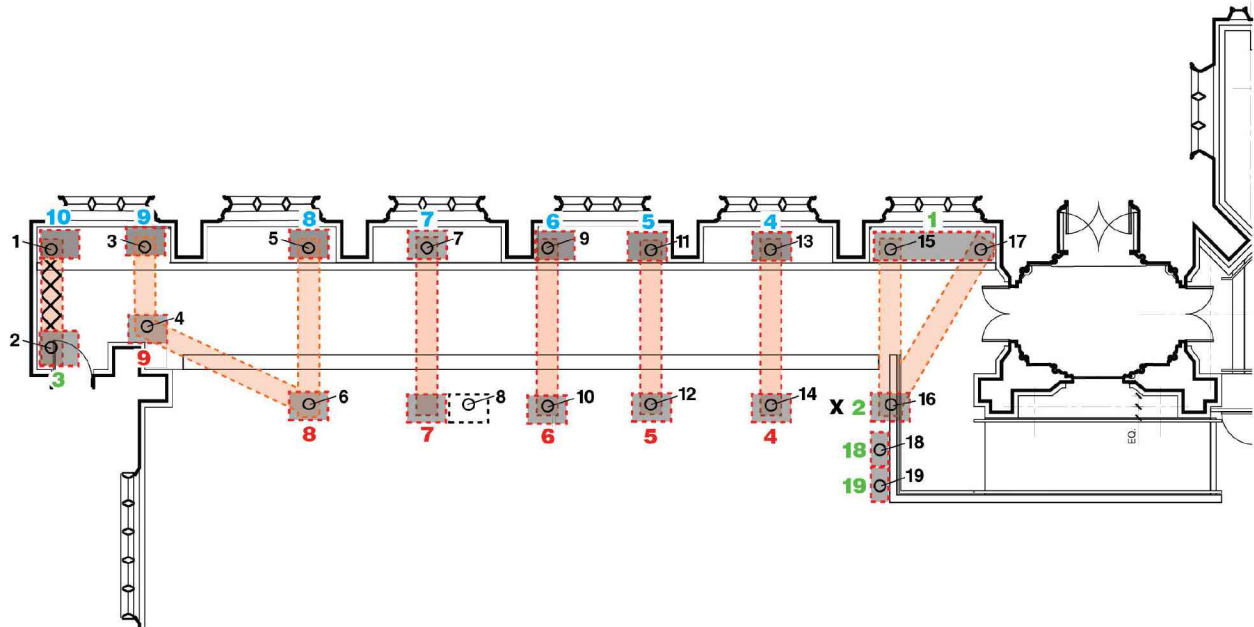
**Photo 23.** Trinity's South Terrace looking west. Soil screening is underway on the far right. (J. Geismar 4/8/19)

<sup>8</sup> A shallow trench associated with TP 18 and 19 did not require oversight.



Base courtesy of MBB Architects 2020





- test pit (TP), NTS
- 1 unpaired TP
- 4 TP north
- 4 TP south
- 1 pile site (approx.)
- grade beam, NTS
- X grade beam and extended testing, NTS
- X undesignated TP, approx. (terminated)
- overlapping stone slabs (vault access), NTS



Base courtesy of MBB Architects 2020

## STAGE 2 TEST PIT AND PILE SITES<sup>9</sup>

**TP 1/Pile(s) 15 & 17 TP Date(s):** 3/26/19, 3/27/19 **Pile Excavation:** 6/27/19

**Location:** N row of TPs along the S wall of Trinity Church in most eastern church alcove.

**TP Dimensions:** 1.3 ft. (0.4 m) x 4 ft. (1.2 m) x D 4.0 ft. (1.2 m) **Pile Excavation Depth(s):** c.9.5 ft. (2.9 m)

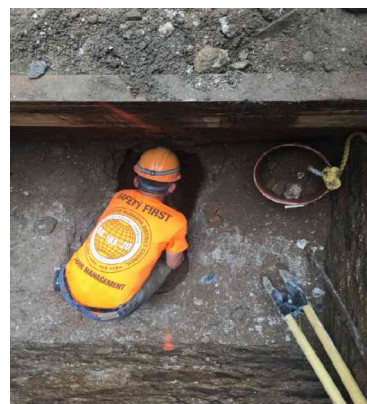
**Description:** TP 1, one of the site's unpaired TPs, was the largest planned test pit and the location of two pile sites. While test pits were basically 4 ft. (1.2 m) square, TP 1 was 8 ft. (2.5 m) E to W by 4 ft. (1.2 m) N to S. An initial ash layer (c. 1.0 to 1.5 ft. [0.3 to 0.5 m] thick), was typical of what was found under the paved walkway). What appeared to be a brick over stone "wall" that defined the pit's S edge (Photo 24) subsequently proved to extend as far as TP 8N. Speculatively a remnant of the demolished 1836 church, the second church on the site, it instead was a N line of burial vaults located beneath the existing paved walkway as documented on a 1925 map (see Figure 18).<sup>10</sup> A cast-iron drain pipe was exposed in the NE part of the TP. Pile sites 15 and 17 were located in TP 1 (Photos 25 and 26).



**Photo 24.** TP 1 in the easternmost alcove. A Cast-iron drain pipe (arrow) is exposed in the east end of the TP. (J. Geismar 3/27/19)



**Photo 25.** Top of brick vault "wall" (arrow) exposed on the south side of the TP. (J. Geismar 3/26/19)



**Photo 26.** Rex of LIC excavating the site for Pile 15 in TP 1. The view is south. (J. Geismar 6/27/19)

<sup>9</sup> Test pit and pile site information is presented sequentially by TP number. Test pit and pile site descriptions are accompanied by photos and selected plans and schematic profiles.

<sup>10</sup> Katherine Malishewsky of MBB Architects provided an overlay of a 1925 map on the current construction plan that proved remarkably accurate.

**TP 2/Pile 16**<sup>10</sup> **TP Date(s):** 4/22/19, 4/23/19, 6/5/19, 6/6/19 **Pile Excavation:** ?

**Location:** Most E TP in the S row of planned test pits/pile sites.

**TP Dimensions:** c. 4.0 ft. (1.2 m) x c.4.0 ft. (1.2 m) x D 10+ ft. (3.1+ m) **Pile Excavation Depth:** ?<sup>11</sup>

**Description:** TP 2 was one of the of six unpaired TPs in the sample. Drainage pipes were exposed in the W part of the TP c. 3.5 ft. (1.1 m) below the surface (Photo 27) and a brick construction that proved to be the W wall of a burial vault was noted in the E wall c. 2 ft. (0.61 m) BGS. Several months after the initial 4-ft. (1.2-m) deep excavation, an additional 6 ft. (1.8 m) were excavated with archaeological oversight to fulfill a Building Department requirement (Photo 28). Fill was documented throughout and the vault wall continued down beyond the monitored depth (excavation continued another 15 ft. [4.6 m] BGS without archaeological oversight). A bone cache, with a fragment of butchered animal bone, was encountered at 7 ft. (2.1 m) BGS during the introduction of S wall lagging. Dr. Allan Gilbert, a brick specialist, kindly examined a large fragment of mortared brick recovered from the TP fill c. 9.0 ft. (2.7 m) BGS. Based on its composition, condition, and mortar, he determined it could be a remnant of a colonial-era brick (Gilbert 2019:Personal Communication; Appendix C). Pile 16 subsequently was introduced into the excavated TP without additional oversight. Shallow cross beam trenches later formed a “Y” that connected Pile 16 in TP 2 and Piles 15 and 17 in TP 1.



**Photo 27.** TP 2 with cast-iron (left) and terra-cotta (right) pipes exposed on the west side of the TP. The view is south. (S. Spritzer 4/23/19)



**Photo 28.** TP 2 after extension from its original 4 ft. (1.3 m) depth to 10 ft. (3.1 m) BGS with archaeological oversight (J. Geismar 6/6/19). An additional 15 ft. (4.6 m) were added without oversight to fulfill a Building Department requirement. Lagging covers the vault wall exposed on the east side (right) of the TP. Note the bucket (arrow) in the northwest corner of the TP.



**TP 3/Pile 2 TP Date(s):** 4/4/19; 4/5/19, 5/30/19, 5/31/19 **Pile Excavation:** 6/27/19

**Location:** Most W TP in S row of test pits/pile sites

**TP Dimensions:** 4.2 ft. (1.3 m) x 3.4 ft. (1.0 m) x D: variable **Pile Excavation Depth:** ?<sup>11</sup>

**Description** TP 3, one of the 4 unpaired TPs in Stage 2, was located at the W end of the S row of test pits, close to TP 9S and adjacent to and partly overlapping TP 7 excavated during Stage 1 oversight . The proximity of the four TPs in this area (TP 9N, TP 9S, TP 10 and TP 3; Photo 29), and a vault and vault access adjacent to the E wall of the Manning Wing, necessitated repositioning TP 3 and adding an exploratory extension (TP 3 EXT). The extension connected TP 3 and TP 9S. A concrete slab was exposed at 3 ft. (0.91 m) BGS (Photo 30) as were a building footer (Photo 31) and the vault. Mixed fill, including a Wrigley's gum wrapper at 4 ft. (1.2 m) BGS, was found throughout. Fill also included animal and human bone and a human tooth.



**Photo 29.** TP cluster (TP 3, TP 10, TP 9N, TP 9S) adjacent to the Manning Wing to the left and rear. The view is west. (D. George 5/31/19)



**Photo 30.** TP 3. A concrete slab in the lower left corner originally was exposed in TP 7 during Stage 1 Oversight. In the background is the east wall of the Manning Wing (D. George 6/24/19)



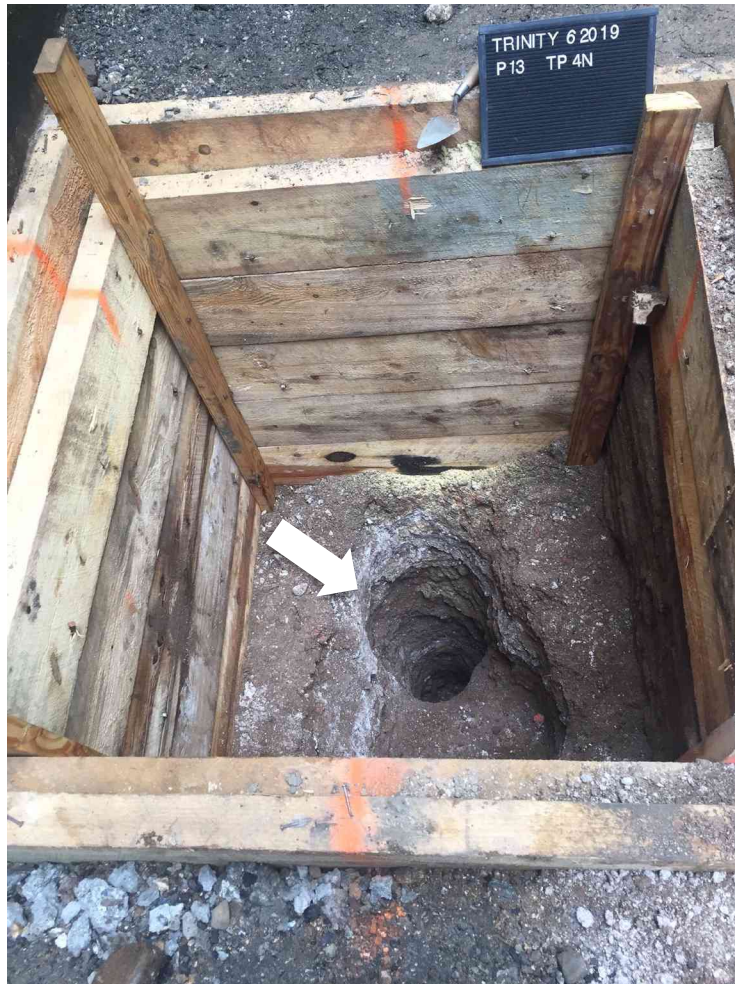
**Photo 31.** TP 3 Ext looking west. (D. George 5/31/19)

**=TP 4N/Pile 13 TP Date: 3/28/19 Pile Excavation: 6/20/19**

**Location:** N TP line, center of 2<sup>nd</sup> alcove of church wall

**TP Dimensions:** 4.0 ft. (1.2 m) x 4.0 ft. (1.2 m) x D 4.2 ft. (1.3 m) **Pile Excavation Depth:** 9.0 ft. (2.7 m)

**Description:** Typical fill in a red sandy matrix. Adult pelvis frag. and vertebra at 3.6 and 4.2 ft. (1.1 and 1.3 m) BGS; juvenile mandible frag also at 4.2 ft. (1.3 m) BGS with oyster shell, a fish bone, charcoal, and nails. The brick and stone “wall” exposed in TP1 continued W. Lagging introduced on all sides during the pile site excavation (Photo 32).



**Photo 32.** Pile 13 site location (arrow) excavated to 9.0 ft. (2.7 m) BGS almost three months after TP 4N was tested. The view is south. (J. Geismar 6/20/19)

**TP 4S/Pile 14** TP Date: 4/8/19 ? Pile Excavation: 6/20/19

**Location:** S TP Line

**TP Dimensions:** 4.2 ft. (1.3 m) x 3.4 ft. (1.0 m) x D 3.0 ft. (0.9 m) **Pile Excavation Depth:** 8.2 ft. (2.5 m)

**Description:** W wall of the TP and E wall of a brick vault (?). PVC drain pipe parallels E pit wall (Photo 33). Relatively clean fill with no artifactual material noted below 4.0 ft. (1.2 m) during subsequent pile excavation although the brick wall indicated a fill situation. Excavation with a post hole digger reached a depth of 8.2 ft. (2.5 m) BGS during pile site excavation oversight. (Note: this was the initial pile site excavation. Rather than using a post hole digger, subsequent pile sites were hand excavated within each TP to attain the desired oversight depth).



**Photo 33.** TP 4S after pile site excavation with a post hole digger. The PVC pipe on the east side of the TP was exposed during the earlier TP excavation and was left in place. What appears to be a vault wall is to the right. The view is south. (J. Geismar 6/20/19)



**TP 5N/Pile 11 TP Date:** 4/2/19 **Pile Excavation:** 6/20,6/22/19

**Location:** N TP Line, E end of 3<sup>rd</sup> church alcove

**TP Dimensions:** 4.0 ft. (1.2 m) x 4.0 ft. (1.2 m) x 4.0 ft. (1.2 m) **Pile Excavation Depth:** ?<sup>11</sup>

**Description:** Typical fill (some shell, corroded nails, ceramic frags). Brick and stone wall first observed on S side of TP 1 continues W. Possible animal bone frag. at 4.0 ft (1.2 m) BGS. Fill mixed with slag. Long bone frag. (animal?) in pile site excavation at 6 ft. (1.8 m) BGS. (Photo 34).



**Photo 34.** TP 5N after excavation to test for Pile 11. While there was no archaeological oversight beyond 6 ft. (1.8 m) BGS, the photo, taken 6/27/19, suggests the test was at least 9 ft. (c 2.7 m) BGS. (J. Geismar 6/27/19)

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<sup>11</sup> No archaeological oversight beyond 6 ft. (1.8 m) BGS

**TP 5S/Pile 12 TP Date:** 4/10/19 **Pile Excavation:** 6/24/19

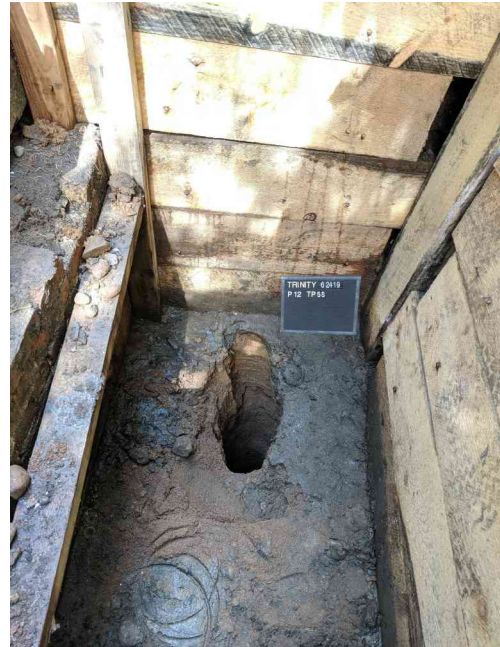
**Location:** S TP line across from E end of church's 3rd alcove

**TP Dimensions:** 4.7 ft. (1.4 m) x 4.6 ft. (1.4 m) x D 4.0 ft. (1.2 m) **Pile Excavation Depth:** 9.3 ft. (2.8 m)

**Description:** Evidence of a shallow brick construction and stone "slabs" (edging?) along the N edge and stone slabs to the S necessitated expanding the TP to S and W (Photo 35) and were possible evidence of vault access in the TP's W wall. N wall of the TP was extended somewhat to assess brick wall. Worked stones are probably a walkway edging. Examination of the backdirt suggested that testing of Pile Site 12 reached natural soil, but at what depth was not determined.



**Photo 35.** TP 5S looking west. Excavation exposed a brick construction to the north (right), a possible brick burial vault in the west wall (rear) and the edging of a vault access to the left (arrow). (J. Geismar 4/10/19)



**Photo 36.** Pile Site 12 in TP 5S after excavation to 9.3 ft. (2.8 m) BGS. (D. George 6/24/19)



**TP 6N/Pile 9 TP Date: 3/29/19 Pile Date: 6/24/19**

**Location:** N TP Line, W end of 3<sup>rd</sup> church alcove

**TP Dimensions:** 4.0 ft. (1.2 m) x 4.0 ft. (1.2 m) x D 4.0 (1.2 m) **Pile Excavation Depth:** 9.8 ft. (3 m)

**Description:** South TP wall is again is defined by the line of brick vaults (Photo 37). Typical fill (e.g., charcoal, burned shell, corroded nails, ceramic frags., vertebrate frag) from 2.75 ft. to 4 ft. (0.8 to 1.2 m) BGS of the TP excavation beneath deep ash layer (the ash layer was troweled through rather than screened). Fill, albeit mainly brick and mortar frags, extended into the deeper pile excavation, including the last ft. of excavation. Soil more saturated with depth.



**Photo 37.** TP 6N and the site for Pile 9 excavated to 9.8 ft. (3.0 m) BGS. The view is south. The pile site is adjacent to the brick vault wall first noted in TP1. Fill included whiteware frags and a corroded nail. Construction to the right, which defines the west TP wall, was unidentified. (D. George 6/24/19)



**TP 6S/Pile 10 TP Date:** 4/8/19 - 4/9/19 **Pile Excavation:** 6/24/19

**Location:** S TP Line across from W end of 3<sup>rd</sup> church alcove

**TP Dimensions:** 4.0 ft. (1.2 m) x 4.7 ft. (1.4 m) x D 4.0 (1.2 m) **Pile Excavation Depth:** 9.8 ft. (3 m)

**Description:** Very rich soil in upper level. Headstone removed by others exposed Bluestone edging? on E side of the TP. Probable vault access at c. 0.7 ft. (0.21 m) BGS (Photo 38). Terminates 4.1 ft. (1.3 m) S of N end of TP. Typical mixed fill (e.g., brick, oyster, and clam shell frags, bottle and window glass, animal long bone, nails, etc). 1987 penny c. 3 ft. (0.9 m) BGS. Lighter soil with fewer artifacts in bottom half of TP but bone c. 3.75 ft. (1.1 m) BGS. Pile excavation into mixed fill continued with depth. Thin rubber (balloon?) frag. at c. 7 ft. (2.1 m) BGS. Cellophane? wrapper and machine-made bottle base frag. Brick and mortar frags (small) c. 9.0 ft. (2.7 m) BGS. Pile site successfully cleared, but with no photo documentation.



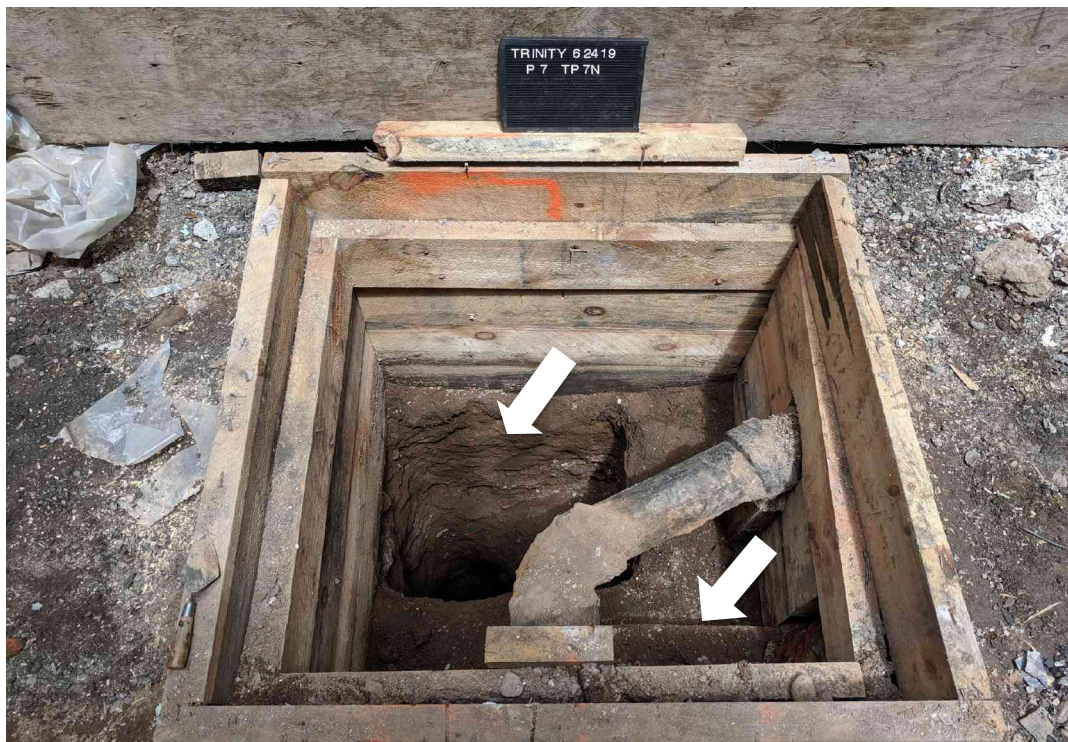
**Photo 38.** TP 6S looking south after excavation. Note the blue-stone edging on the east side of the TP (arrow) that proved to be a vault access. (J. Geismar 4/9/19)

**TP 7N/Pile 7** TP Date: 3/27/19, 3/28/19 Pile Excavation Date: 6/24/19

**Location:** Center of 4<sup>th</sup> church alcove

**TP Dimensions:** 4.0 ft. (1.2 m) x 4.0 ft. (1.2 m) x D 4.0 (1.2 m) **Pile Excavation Depth:** 9.3 ft. (2.8 m)

**Description:** TP for early pile and grade beam tests. Drainage pipe in SE part of TP at 1.5 ft. (0.5 m) BGS. Pile site was cleared in the NW corner of the TP (Photo 39). South church foundation exposed on N side of TP and Brick vault line in other N TPs in S TP wall. Brick feature in the SE corner of the TP at 2.5 ft. (0.8 m) BGS similar to the brick drainage feature documented in TP 9 during Stage 1 Oversight (see Photo 20). Brick vault line found in other TPs continues along S TP wall.



**Photo 39.** TP 7N after testing the site for Pile 7 in the NW corner of the TP (upper arrow). The view is north with the south wall of the church in the upper background. A brick construction barely visible under the drainage pipe in the southeastern part of the TP (bottom arrow) is similar to the brick feature documented in TP 9A during Stage 1 Oversight. (D. George 6/24/19)



**TP 7S/Pile 8** TP Date: 1) 3-28 -19 2) Revisited 4-22-19 **Pile excavation:** 6/26/19 (no arch. oversight)

**Location:** S TP line across from center of 4<sup>th</sup> church alcove

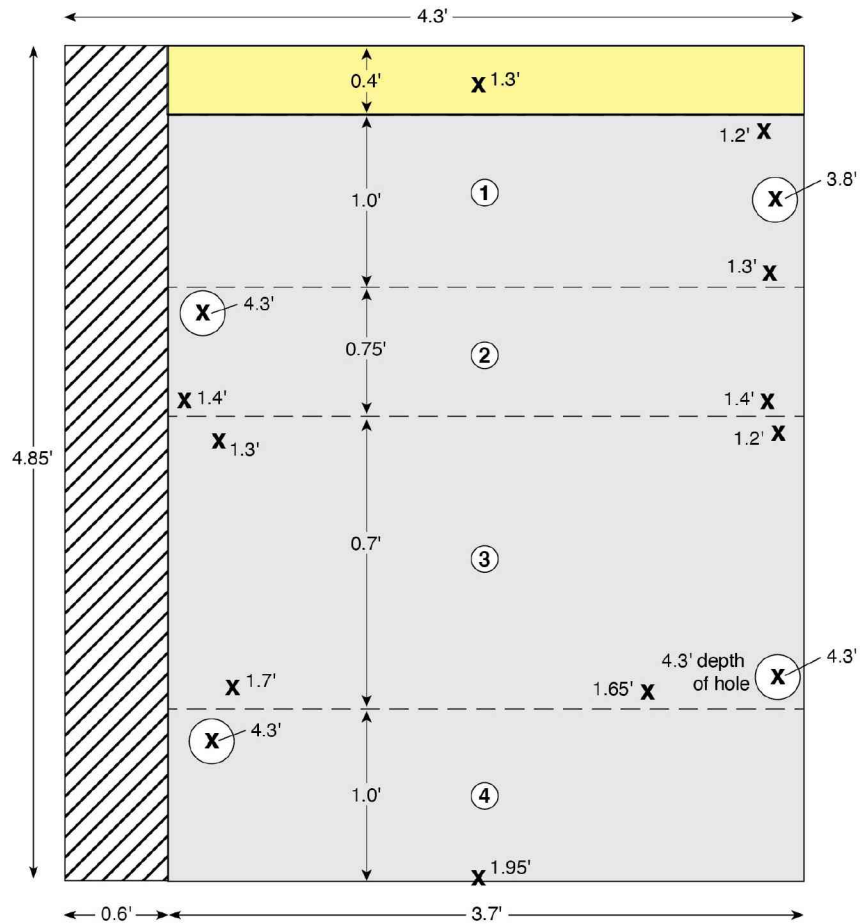
**TP Dimensions:** 1) 4.0 ft. (1.2 m) x 4.0 ft. (1.2 m) x D > 2.0 ft. (0.6 m) **Pile Excavation Depth:** 9.0+ ft. (2.7+ m)  
2) 4.7 ft. (1.4 m) x 4.6 ft. (1.4 m) x D 1.95 ft. (0.6 m) [adjacent test S of 7S]

**Description:** Brick construction, apparently a burial vault, on W side of TP; cast-iron drainpipe, 1.8 ft. (0.6 m) BGS, runs N-S across the vault just off-center of the TP (apparently a continuation of drain in TP 7N). Stone edging (?) c. 0.5 ft. [0.2 m] wide with evidence of overlapping stone slabs exposed on E side of the TP (vault access). A densely constructed TP with typical fill (Photo 40). Revisited 4/22/19. Extended pit to the E and uncovered the overlapping stone slabs first seen on the E side of TP 7S. The four slabs were 1.2 ft. (0.3 m) to 1.95 ft. (0.6 m) BGS N to S (Figure 19). Holes were noted on the edge of the stones. A vault access was confirmed and, with the church's permission, the site for Pile 8 was relocated to the vault access and excavated by 6/24/19 without archaeological oversight. Any stockpiled soil above the slabs was screened.



**Photo 40.** Annotated view of TP 7S after excavation exposed a burial vault, a cast-iron drain pipe, what proved to be the stone edging (arrow) of vault access, and overlapping stone slabs (the view is south). (J. Geismar 3/28/19). The slabs were fully uncovered (see Figure 19) and, with the church's consent, the site for Pile 8 was relocated to the access to avoid disturbance to the burial vault.





- yellow mortar over brick
- overlapping stone slab
- stone edging (exposed in TP 7S)
- X hole in overlapping stone slabs
- X** depth BGS

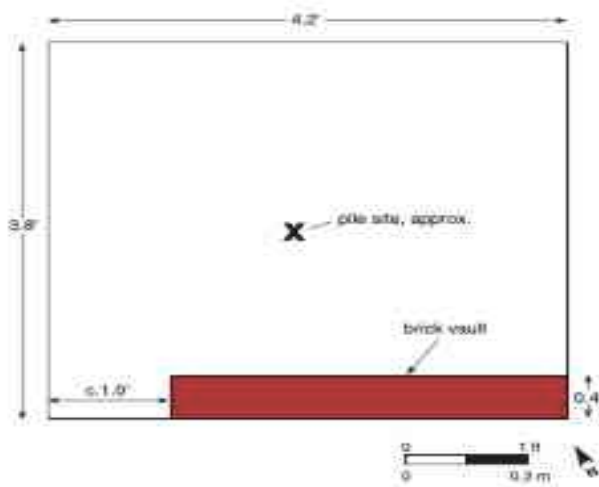


**TP 8N/Pile 5** TP Date: 4/12/19; revisited 4/16/19 Pile Excavation: 6/24/20

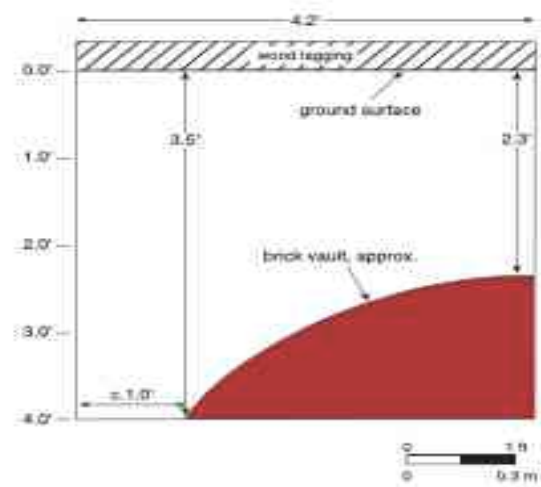
**Location:** E end of 5<sup>th</sup> church alcove

**TP Dimensions:** 4.2 ft. (1.3 m) x 3.8 ft. (1.2 m) x D 4.0 (1.2 m) **Pile Excavation Depth:** 9.7 ft. (3.0 m)

**Description:** What appeared to be a virtually continuous N line of vaults first observed in TP 1 ended with an arched vault wall along the TP's S wall c. 1.0 ft. (0.3 m) from the W side of TP 8 (see schematic plan and profile Figures 20a 20b; Photos 41 and 42). Typical TP fill throughout. Pile excavation encountered thin pockets of ash below 4.0 ft. (1.2 m) in silty sand with cobbles and small pebbles. Two bricks in pile fill 7.0 to 7.5 ft. (2.1 to 2.3 m) BGS. Mortar and some brick frags noted throughout the pile excavation as well as coal, a nail, a salt-glazed stoneware sherd, and scallop, clam, and oyster shell frags.



**Figure 20a.** TP 8N with Pile Site 5 Profile



**Figure 20b.** TP 8N Schematic South Wall



**Photo 41.** TP 8N looking S. The arched brick feature (arrow) is the most W evidence of the line of brick vaults exposed in TPs to the E. (D. George 6/20/19)



**Photo 42.** TP 8N shown in the SE corner of Alcove 5 of Trinity's south wall. The view is N with Pile Site 5 (arrow) fully excavated (D. George 6/20/19)

**TP 8S/Pile 6 TP Date:** 4/8/19, 4/24/19 **Pile Excavation:** 6/24/19, 6/26/19

**Location:** S TP Line, across from E end of 5<sup>th</sup> church alcove

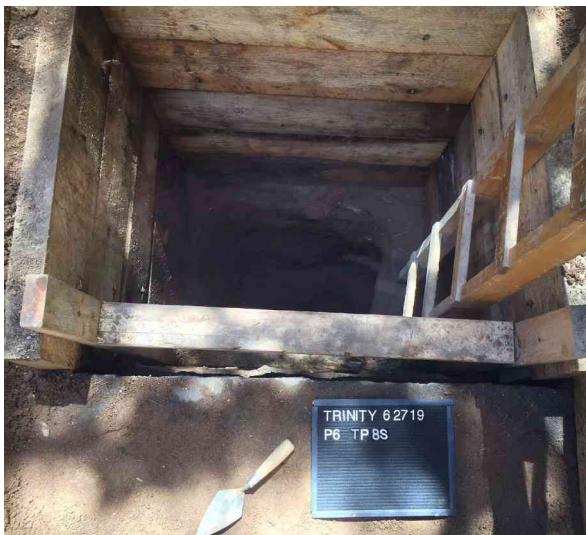
**TP Dimensions:** 4.0 ft. (1.2 m) x 4.0 ft. (1.2 m) x D 4.1 ft. (1.2 m), extended 4/24/19

**Pile Excavation Depth:** initially 8.6 ft. (2.6 m); extended to 9.8 ft. (3.0 m) BGS.

**Description:** Stone edging for vault access? (arrow) on E edge of the TP (Photo 43). Brick vault in W part less than 1.0 ft. (0.3 m) (BGS), ends 6.5 ft. (2.0 m) BGS. Slanted stone slab exposed in S and E TP wall 4.1 ft. (1.2 m) BGS proved c. 1.0 ft. (0.3 m) thick and unstable (collapsed with pressure). Pile excavation, in a reduced area, was in typical fill. The pile site (Pile 6), initially 8.6 ft. (2.6 m) BGS, was revisited and a post hole digger used to reach a depth of 9.8 ft. (3.0 m) BGS (Photo 44).



**Photo 43.** TP 8S looking S with stone edging on the E side. (J. Geismar 4/8/19).



**Photo 44.** Pile Site 6, initially taken to 8.6 ft. (2.6 m) BGS, was revisited, condensed, and extended to 9.8 ft. (3.0 m) BGS on 6/26/19. (J. Geismar 6/27/19)



**TP 9N/Pile 3 TP Date:** 4 /3/19, 4/4/19 **Pile Excavation:** 6/24/19

**Location:** E end of 6<sup>th</sup> church alcove

**TP Dimensions:** 4.0 ft. (1.2 m) x 4.0 ft. (1.2 m) x D 4.0 ft. (1.2 m) **Pile Excavation Depth:** 9.0 ft+ (2.7+ m)

**Description:** TP 9N was among those in the aforementioned TP cluster associated with TP 3 (see Photo 29). Uppermost 1.5 ft. (0.5 m) were ash. Typical fill (oyster and clam shell frags, brick frags, small frags unburned coal). Soil saturation made screening difficult. Second day, 3 possible human bone frags mixed with ceramic and oyster shell frags, nails, and kaolin pipe stem frags mostly from stockpiled soil recovered between 2.0 and 4.0 ft. (0.6 and 1.2 m) BGS. Many rocks to 7 ft. (2.0 m) BGS with mortar and brick chunks, smaller frags, and some oyster shell as well as what appeared to be burned coal at 9.0 ft. (2.7 m) BGS (Photo 45).



**Photo 45.** TP 9N after excavation to test Pile Site 3. The view is north. (D. George 6/24/19)

**TP 9S/Pile 4 TP Date:** 4/5/19, 4/8/19 **Pile Excavation:** 6/27/19

**Location:** S TP Line across from E end of 6<sup>th</sup> church alcove

**TP Dimensions:** 4.0 ft. (1.2 m) x 4.0 ft. (1.2 m) x D 4.3 ft. (1.3 m) **Pile Excavation Depth:** ?

**Description:** TP 9S was a component of the TP cluster noted in the description of TP 3.

Screening followed removal of 3 layers of waterproof fabric associated with the paved walkway adjacent to the church's S wall. A corrugated plastic leaching pipe exposed on E side of the TP below the 3rd layer of waterproof fabric. TP fill included 2 small human skull frags. Diagonal brick wall below stone in TP's W wall (Figure 21). During pile site excavation, brick/mortar frags 5 ft. (1.5 m) BGS with larger fragments and stones with depth. Natural soil at 7.0 ft. (2.1 m) BGS. An almost whole whelk shell (Photo 47) was recovered from natural soil at c. 7.5 ft. (2.3m) BGS (approximately the same depth as degraded oyster shells noted in nearby TP LB-1 in Stage 1). Subsequent C-14 analysis provided a date of 980-1260 AD, or 970-690 years BP for the shell (Beta Analytic 2019; see Appendix D for details) that was identified as a knobby whelk (*Busycon cariacae*) "juvenile of indeterminate sex" that "currently largely inhabit[s] tidal estuaries along the Atlantic coast" (Fisher 2020:personal communication;<sup>12</sup> Fisher and Rudders 2017).

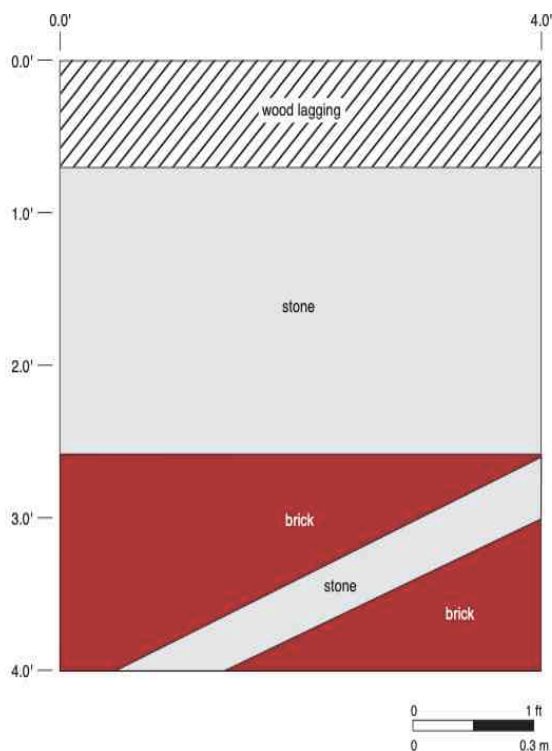


Figure 21. TP 9S Schematic West Wall Profile. (unidentified stone and brick construction in TP's W wall).



Photo 46. TP 9S after excavation of Pile Site 4 (arrow) to approximately 10 ft. (3.0 m) BGS. (D. George 6/27/19)

<sup>12</sup> I am grateful to Dr. Robert Fisher for his generous input.



**Photo 47.** Almost whole knobby whelk shell (*Busycon carica*) recovered from natural soil in TP 9S during testing the site of Pile 4 in the S line of test pits. Identified as a “juvenile of indeterminate sex” that “currently largely inhabit tidal estuaries along the Atlantic coast” (Fisher 2020:personal communication), C-14 dating determined it could be as much as 1,000 years old (see Appendix D) and predates historic-era use of the site. Deposited prior to early-18<sup>th</sup>-C. land reclamation that altered the Hudson River shoreline, it may relate to the site’s natural history or to Native-American use of the site. Unfortunately, the shell was destroyed during radio carbon dating and this is the sole image. (Photo: J. Geismar)



**TP 10/Pile 1 TP Date:** 4/1/19, 4/5/19 **Pile Excavation:** 6/24/19

**Location:** Junction of the NE corner of the S church wall and the Manning Wing; W part of the 6<sup>th</sup> and last alcove of the S church wall, directly north of TP 3.

**TP Dimensions:** 4.0 ft. (1.2 m) x 4.0 ft. (1.2 m) x D 4.0 ft. (1.2 m) **Pile Excavation Depth:** 9.7 ft. (3.0 m)

**Description:** TP was excavated in multiple stages. Initially, a rocky soil beneath a layer of slag and ash followed by typical fill (corroded nails, oyster, clam, and ceramic frags, plastic beverage cup lids, and other plastic frags); a human rib frag. at c. 2.0 ft.(0.61 m) BGS. Stone slabs extend into pit from the E side of the Manning Wing foundation (Photo 48). Typical fill continued to 9.7 ft. (3.0 m) and included plastic/cellophane wrapper and plastic, latex? (balloon?) frag, and the base of a machine-made (20<sup>th</sup> C) bottle. Concrete footer documented in the W wall and stone in the N wall of pre-existing TP.

The TP cluster (TP 9N, TP 9S, TP 3, and TP 10; see Photo 29) on the west end of a former paved walkway and the site of the planned ADA compliant canopied walkway documented conditions that included a brick vault and vault access adjacent to the Manning Wing's east foundation wall. TP 3 was extended north in the vicinity of TP 7 previously excavated during Stage 1(see Photo 30). Excavation along the east wall of the Manning Wing determined locations of a vault and access. Despite these obstacles, all pile sites on the west end of the walkway were introduced.



**Photo 48.** Completed excavation to 9.8 ft. (3.0 m) BGS of test for Pile Site 1 in TP 10 is a good visual example of a pile test excavation. (D. George 6/24/19)



## UNDESIGNATED TP

The aforementioned “Undesignated” TP was opened W of and parallel to TP 2 (see Figure 18 for location). Excavation was without archaeological oversight on an unidentified date. The goal was to locate additional pile sites that, with Pile 16 in TP 2, would create a row of three piles for a pile test. However, a brick vault was exposed at 1.9 ft. (0.6 m) BGS in the N end of the TP and 3.6 ft. (1.1 m) BGS in the S end, a feature that filled the TP (Photo 49). Bluestone steps ?? were also exposed. The TP, its excavated dimensions 3.6 ft. (1.1 m) E to W and 4.6 ft. (1.4 m) N to S, was terminated. Stockpiled soil was screened on 6/24/19 and, on 6/26/19, excavation of two additional but contiguous TPs was begun S of TP 2 to locate the sought after pile sites (see (TP 18/TP19)).



**Photo 49.** Undesignated TP in context after it had been terminated. A brick burial vault fills the excavated TP located E of TP 2 (to the left under plastic and plywood). The view is SE with the corner of Broadway and Rector Street behind the chain-link fence. Stockpiled soil from the TP is being screened (arrow). (D. George 6/27/19)

**TP 18 /TP 19      Date:** 6/26 /19, 7/1/19      **Pile Pull Test Excavations:** 7/1/19

**Location:** S of S Line of TPs, S of and in line with TP 2

**TP Dimensions:**      **Pile Excavation Depth:** 9.0 ft. (2.7 m,) well into natural soil)

**Description:** This double TP was added to locate two sites needed to facilitate a pile pull test. Sand was documented to c. 5.6 ft. (1.7 m) BGS in both TPs followed by stone/rocks and a typical mixed fill that included slag and some animal and human bone. Excavation of TP 18 halted at 6.0 ft. (1.8 m) BGS when a cache of fragmentary bones was encountered in the NE corner, and in TP 19 at c. 5.8 ft. (1.8 m) BGS with discovery of what appeared to be a possible *in situ* burial. Further exploration indicated the bones in TP 18 would not be disturbed by excavation for the pull test and those in TP 19 comprised a thin concentration of highly disturbed and mixed human remains (MNI 2; Photo 50). After a conferring with the church, the skeletal material in TP 19 was left *in situ* to avoid disturbing any unknown burials and the church conducted a religious ceremony (Photo 51). Two locations devoid of human remains were identified for the pile test.



**Photo 50.** Cory Look reconstructing the placement of human bones recovered from TP 19 to determine if they represent an intact burial. Although several bones were from a single individual (see those near Cory's feet), they and others were a jumble of highly disturbed burials. At the church's discretion, the bones were left *in situ* and Reverend B. Jenner conducted a burial service (see Photo 51). Pile Site 18 (arrow) in TP 18, is to the left. A pile site in TP19 was cleared where Cory is perched. (J. Geismar 7/2/19). These piles were not among 17 initially planned but were added for a pile test





**Photo 51.** Reverend Bruce Jennecker conducting a burial service over the highly disturbed collection of human bones uncovered in TP 19. The view is S toward Rector Street. With the possibility that further excavation could disturb unknown burials, the church made the decision to leave the bones *in situ*. Locations for the sought after pile sites were identified in TP 18 and TP 19. (J. Geismar 7/2/19)

## STAGE 2 SHALLOW SOUTH TERRACE TRENCHES

Beginning on 7/17/19, ten shallow cross trenches (c. 1.0 to 1.5 ft. [0.3 to 0.5 m] BGS) were excavated between pile sites on the south side of the church to accommodate grade beam supports for the new covered walkway (see Figure 18). After paving that ran along the south side of the church had been removed, any soil that remained beneath a slag and/or ash layer was to be screened. However, as it turned out, a number of grade beam sites and other shallow trenches had been previously excavated and the soil screened. The few shallow deposits of unexcavated soil that remained were easily troweled through. No bone material was recovered or noted. (see Photo 52 for typical shallow trench excavation).



**Photo 52.** Typical shallow trench excavation on the South Terrace. (M. Kajano 8/28/19)



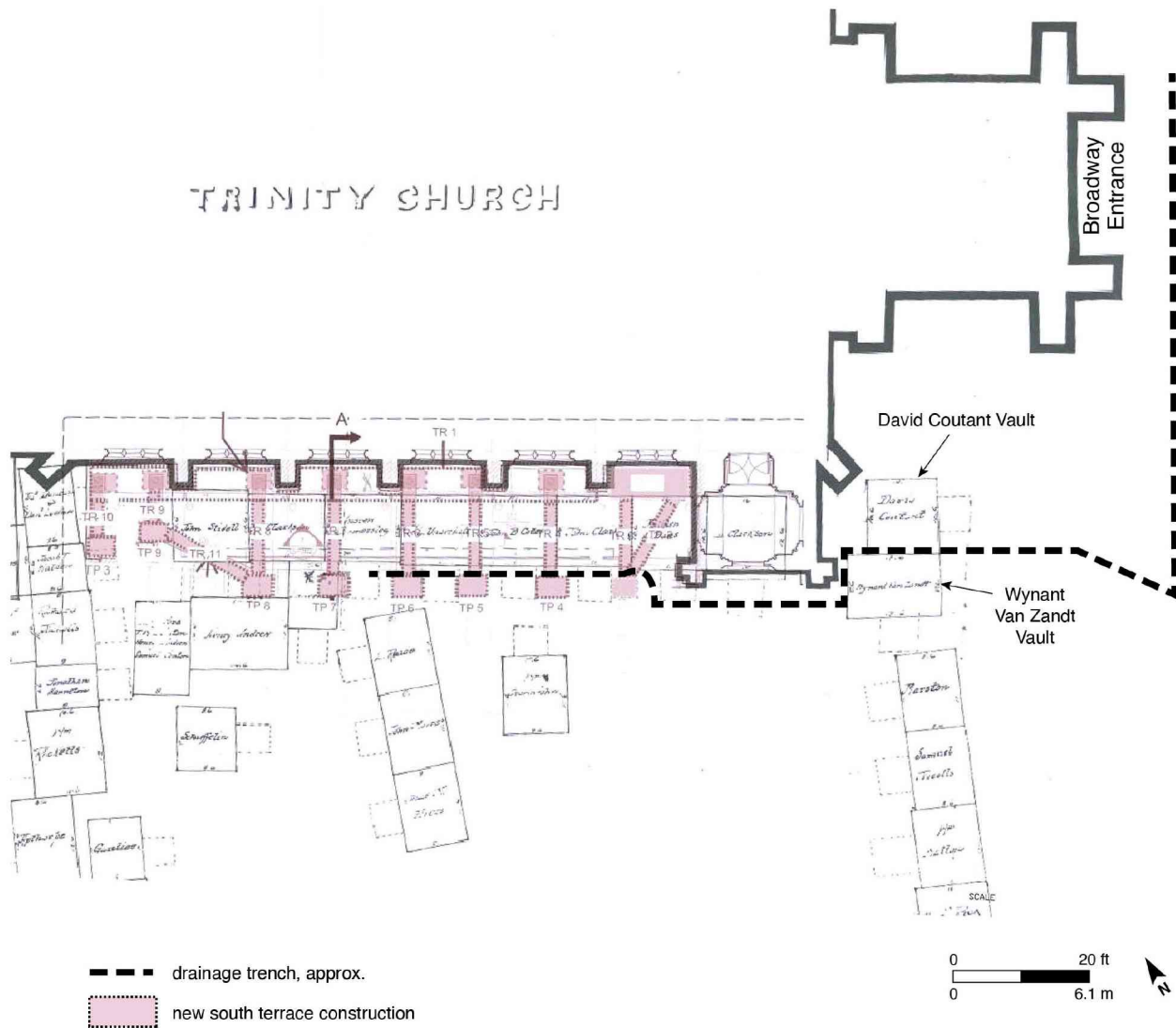
## STAGE 2 DRAINAGE TRENCH

An approximately 200-ft. (55.0 m) long and 2 ft. to 3 ft. (0.6 to 0.9 m) deep basically L-shaped drainage trench was excavated at the close of Stage 2 archaeological oversight. On 8/28/19, excavation began at the E end of the church's 4<sup>th</sup> alcove where an existing rain drain was located next to the footprint of the planned covered walkway and proceeded east (Photo 53 and Figure 22). Just beyond the SE corner of the church, a large burial vault (c. 9.5 ft. [2.9 m] N to S) was exposed on the S side of the trench (Photo 54). A somewhat smaller vault was exposed on the N side with the two vaults defining a narrow but adequate passage for the drainage trench to continue E. Map data identifies the vault owner of the larger of the two vaults as Wynant Van Zandt, a prominent late-18<sup>th</sup>-century New York City merchant. The owner of the adjacent but slightly smaller vault was David Coutant about whom little is known (see Figure 22). Excavation continued E before turning N and terminating just beyond the church's Broadway entrance on September 30, 2019 (Photos 56-57). Recovered bone material mainly comprised animal bone fragments.



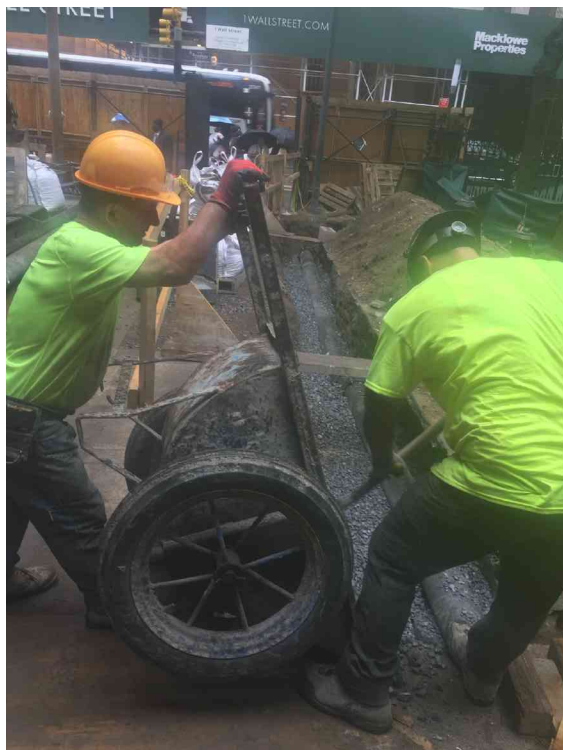
**Photo 53.** Excavation of the south drainage trench was underway on 8/28/19. The view is west on the South Terrace. (J. Geismar 8/28/19)







**Photo 54.** Drainage trench excavation in the vicinity of Wynant Van Zandt's large brick burial vault (arrow). Soil and cinder block were introduced above the vault. (J. Geismar 8/28/19).



**Photo 55.** Introduction of gravel into the drainage trench now running east of Wynant Van Zandt's and David Coutant's burial vaults. Broadway is beyond the chain-link and plywood fence in the background. (J. Geismar 9/4/19)





**Photo 56.** The north-south leg of the drainage trench looking north. A cast-iron pipe is exposed in the trench and Broadway is to the right beyond the plywood and chain-link fence. The excavated soil is being screened in the very limited space between the trench and the fence (right arrow). Excavation terminated to the north, just beyond the church's Broadway entrance where some screened soil temporarily is stockpiled (left arrow). (J. Geismar 9/30/19)



## SUMMARY AND CONCLUSIONS

During two stages of Phase 1 construction at Trinity Church, Stage 1 between August 27 and September 13, 2018, and Stage 2 between March 26 and September 30, 2019, planned test units (27 TPs and 17 mini-pile sites) and a 200-ft. (61.0-m) long drainage trench were excavated with archaeological oversight (ten shallow excavations cross beam excavations for the walkway and miscellaneous testing were monitored as warranted). All was hand excavated by LIC construction personnel and, with few exceptions, all excavated soil was screened to recover isolated (scattered) human skeletal material. In addition to 61 Isolated human bones retrieved during Stage 1 oversight, 94 bones from an *in situ* but partially disturbed and apparently relocated infant burial in TP LB-1 were recovered adjacent to the church's Manning Wing. During Stage 2, 155 isolated human bones were collected and analyzed but no burials were encountered. A total of 39 human teeth, 30 from Stage 1 and 9 from Stage 2, also were recovered. Following an established protocol, all skeletal material was stored, documented, and analyzed on-site with a report of the methods and findings written and produced by Matthew Brown, the project bioarchaeologist (see Appendix A). The church intends to rebury the collected skeletal material in the churchyard with a fitting ceremony.

Although basically intact but disturbed infant burial exposed during Stage 1 oversight apparently was moved from its original burial site in the past. This was suggested not only by its location in the test pit's lowest identified fill level (3.2 ft. [1.0 m] BGS), but also by its location within the construction zone of the Manning Wing erected in the 1960s. The age of the infant could not be determined nor is the date of original burial known. However, the south churchyard where it was found apparently was active from the early 18th century until c. 1827.

Analysis of isolated bone material and the burial from Stage 1 oversight yielded a minimum number of thirteen individuals (MNI) while the MNI from the Stage 2 assemblage was 24. However, bone distribution in both stages suggests the MNI undoubtedly is under counted.

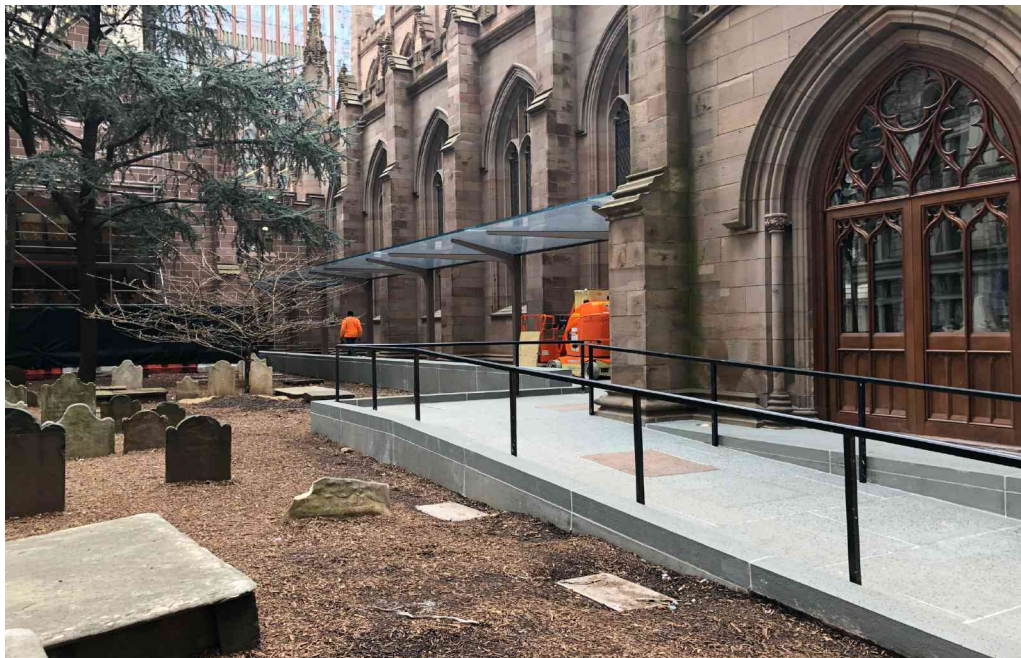
During both oversight stages, test pits typically were 4 ft. (1.2 m) deep, but some were ultimately deeper. The soil matrix throughout the planned test pits was a redeposited fill. However, in TP LB-1 (Stage 1), only the first 3.2 ft. [0.98 m] BGS, that ended with the disturbed infant burial, were identified as such. Following removal of the burial, testing the soil boring site entailed hand excavation then a post hole digger and then a hand auger to c. 8.0 ft. BGS with oversight. Degraded oyster shells were collected, one at 7.5 and the other 8.0 ft. (2.3 and 2.4 m) BGS, both undoubtedly remnants the site's pre-historic-era. With confirmation that undisturbed natural soil was reached, the soil boring was drilled (see Appendix B for the TP LB-1 Soil Boring Log)]. During Stage 2 oversight, testing for Pile 4 in TP 9S reached natural soil at c. 7.0 ft. (2.1 m) BGS and an almost whole knobby whelk shell was recovered at 7.5 ft. (2.3 m) BGS (see Photo 47), that is, at about the same depth as the degraded oyster shells from TP LB-1 in Stage 1. The depth of these finds, and their proximity, is of interest as it relates to the natural history of the Trinity Church site. Radiocarbon (C-14) dating of the whelk shell suggests it could be almost 1,000 years old (See Appendix D). It

should be noted that in all deep excavations, with the possible exception of TP LB-1, redeposited fill was documented well beyond 4.0 ft. (1.2 m) BGS.

Construction of the high perimeter wall on Rector Street, which dates to about 1867, apparently accounts for the 11.9 ft. (3.6-m) of redeposited fill documented during Stage 1 in TP 9A (TP 9 relocated) that abutted the wall. Elsewhere, the fill appears to reflect 18<sup>th</sup> and early 19<sup>th</sup>-century construction of burial vaults and more recent drainage and miscellaneous excavations. Fill objects were not collected (exceptions included items retained for teaching purposes) but occasionally were photographed.

During Stage 1, two brick burial vaults were exposed along the south church wall less than 2.0 ft. (0.6 m) BGS, and therefore somewhat shallower than indicated on a Ground Penetrating Radar (GPR) survey. Two others were exposed adjacent to the church's west wall. During Stage 2, in addition to several brick burial vaults, evidence of vault accesses was also found. Of note in Stage 2 is what proved to be the north end of brick vaults that extended west from the church's southeast vestibular entrance and defined the south wall of test pits that bordered the church's south wall. While several vault related finds called for adjustments to planned pile sites or grade beam trenches, excavation did not impact any burial vaults. Nor were they impacted by site improvements, such as the approximately 200-ft. (61.0 m) long, L-shaped drainage trench excavated south and east of the church.

Following completion of the excavations, the ADA compliant canopy covered walkway was installed on the South Terrace adjacent to the church (Photo 57).



**Photo 57.** ADA compliant access and covered walkway newly constructed on Trinity's South Terrace. The view is northwest. (J. Geismar 3/10/20)

## REFERENCES

### Adams & Woodbridge

1963 Plot Plan, Boring Data. Alterations & Additions to Trinity Church, Broadway at Wall Street. Harry T. Bridge PE No 9978. Adams & Woodbridge Architects, New York. July/December 1963. Trinity Wall Street Archives through MBB Architects.

### Allen, John

2002- Timeline for Trinity Retaining Wall. Prepared for John Allen. 11/10/02; added 2012 to 1/8/2010, 3/2012. Courtesy of Joseph Lapinski, Archivist, Trinity Wall Street.

### Beta Analytic

2019 Radio Carbon Dating Results. Report of Radio Carbon Dating: Trinity Sample. Lab No.. 534940. August 30, 2019. Beta Analytic Testing Laboratory. Beta Analytic, Inc. Miami, FL.

### Bridgeman and Morehouse

1898 A History of the Parish of Trinity Church in the City of New York: To the close of the rectorship of Dr. Inglis, A.D. 1783. Charles Thorley Bridgeman, Clifford P. Morehouse. Putnam, 1898. On-line: [https://books.google.com/books?id=pmAEAAAAYAAJ&dq=A+History+of+the+Parish+of+Trinity+Church+in+New+York+Par+1&source=gbs\\_navlinks\\_s](https://books.google.com/books?id=pmAEAAAAYAAJ&dq=A+History+of+the+Parish+of+Trinity+Church+in+New+York+Par+1&source=gbs_navlinks_s).

### Duffy, John,

1968 A History of Public Health in New York City. Russell Sage Foundation, New York.

### Fisher, Robert A.

2020 Personal communication. E-mail 7-1-20.

### Fisher, Robert A. and David Rudders

2017 Population and Reproductive Biology of the Channeled Whelk, *Busycotypus canaliculatus*, in the US Mid-Atlantic. VIMS Articles. 304. <https://scholarworks.wm.edu/cgi/viewcontent.cgi?article=1303&context=vimsarticles>

### Geismar, Joan H.

2018 Draft [Final] Archaeological Protocol re Construction-Related Test Pits/Soil Boring Associated with Planned Site Work at Trinity Church. Prepared for Zach Poole, MBB Architects. May 10, 2018. Approved' Work Permit (Docket: LPC-19-23763; PMW-19-23763) 05/16/18.

2017 Trinity Church Walkway Impact Assessment. Prepared for Zach Poole, Murphy Burnham & Buttrick, Architects. Prepared by Joan H. Geismar, Ph.D., LLC. April 24, 2017.

### Geo-Graph

2017 Subsurface Anomaly Map. Geophysical Investigation Findings, Trinity Church Burial Vault & Grave Search, Trinity Church, 75 Broadway, New York, NY. July 21, 2017.



## REFERENCES (Continued)

Gilbert, Allan

2019 Analysis of Brick and Mortar Fragment from TP 2. Personal communication. E-mail Exchange (June 7, 2019, June 8, July 23, 2019).

Landmarks Designation Report (LPC)

1966 Trinity Church and Graveyard, Broadway at Wall Street, Borough of Manhattan. Landmarks Preservation Commission, August 16, 1966, Number 2. LP-0048. On-line: <http://s-media.nyc.gov/agencies/lpc/lp/0048.pdf>

Langan

2020 Trinity Layout Plan (L-104). Rev. 5 1-30-2020. Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C. 21 Penn Plaza, 360 West 31st Street, 8th Floor, New York, New York 10001.

2019 Trinity Grading and Drainage Plan (C-201.00). 07/16/2019-RFI 249. Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C. 21 Penn Plaza, 360 West 31st Street, 8th Floor, New York, New York 10001.

2018a Trinity Subsurface Investigation (with notations). Project No. 170455301. Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C. 21 Penn Plaza, 360 West 31st Street, 8th Floor, New York, New York 10001. 04-13-18; revised c. 008-21-18.

2018b Geotechnical Engineering Report for Renovation of Trinity Church, New York, New York. Prepared for Murphy Burnham and Buttrick, Architects. 48 West 37th Street, 14th Floor, New York, New York 10018. Prepared by Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C. 21 Penn Plaza, 360 West 31st Street, 8th Floor, New York, New York 10001. 31 October 2018.

Lapinski, Joseph

2017 Personal Communication. Archivist, Trinity Church Wall Street. 120 Broadway, New York, NY.

Leonard, John William

1910 History of the City of New York, 1609-1909, From the Earliest Discoveries to the Hudson-Fulton Celebration; Together with Brief Biographies of Men Representative of the Business Interests of the City. On-line: <https://play.google.com/books/reader?id=4486AQAAIAAJ&hl=en&pg=GBS.PR7.w.2.3.0.1>

Lynes, James

1728 A Plan of the City of New York from an Actual Survey. Facsimile of the original map in the possession of G.B. Smith, Street Commissioner. Published by G. Hayward Lithographers, No. 1 Cortlandt Street, New-York. 1834.

## REFERENCES (Continued)

### MNLA

2020 Site Layout Plan. Base Plan 2018, Revised 2020. Matthews Nielsen Landscape Architects (MNLA), New York.

### Stokes, I. N. P.

1922 The Iconography of Manhattan Island 1498 to 1909, Volume IV. Robert H. Dodd, New York. Republished by the Arno Press, New York 1967.

---

1916 The Iconography of Manhattan Island 1498 to 1909, Volume II. Robert H. Dodd, New York. Republished by the Arno Press, New York 1967.

### Trinity Blog (Trinity News & Blog)

2016 The Oldest Gravestone in the Trinity Churchyard. August 05, 2016. On-line: <https://www.trinitywallstreet.org/blogs/archives/oldest-gravestone-trinity-churchyard>.

### Trinity Sketch Plan

1963 1963 sketch plan of identified tombstone removals. Trinity Wall Street Archives.

### USGS

n.d. mytopo, On-line: <http://www.mytopo.com/maps/?lat=40.7192&lon=-73.99169&z=14>

### Valentine, D. T.

1856 Manual of the Corporation of the City of New York for 1856. Printed by McSpedon & Baker, Printers, New York.

### Viele, Egbert L.

1865 Sanitary & Topographical Map of the City and Island of New York. Prepared for the Council of Hygiene and Public Health of the Citizen's Association. Entered According to Act of Congress in the Year 1865 by Egbert L. Viele in the Clerk's Office of the District Court of the United States for the Southern District of New York.

APPENDIX A.  
Phase 1, Stage 1 and 2, Human Skeletal Remains  
(Matthew Brown, Ph.D., CERMI LLC)



## ***Introduction***

Between August 27, 2018 and September 30, 2019, human skeletal remains were recovered during Phase 1 excavations conducted in two stages (Stages 1 and 2) around Trinity Church (TC). All but five of 36 excavated test pits mainly were associated with construction of a covered pedestrian walkway on the church's South Terrace in addition to a long drainage trench south and east of the church. However, three test pits were located on the west side of the church, two were on the east side, and one was on the north side (see main report). Human remains from 20 of the excavated test pits and the drainage trench were recovered from depths mainly 1 to 4 ft. (0.3 to 1.2 m) below ground surface (BGS). None were primary burials. With the exception of what is designated TC -7 in this report (see below), (TP L-B1 in the main report), the human remains comprised disarticulated but complete bones, fragmented bones, and individual teeth. Following the project protocol, this report presents the findings of analyses of the two field stages intermittently conducted on site between the 14<sup>th</sup> of September 2018 and the 24<sup>th</sup> of November 2019.

## ***Site Monitoring***

In-field monitoring of the construction-related test-pits (specifically related to human remains) was conducted by the author and or Dr Cory Look under the supervision of the PI, Dr Joan H. Geismar. Additional personnel were available and on site at all times during the field phase, aiding in the monitoring of the excavation units and screening. All bone and dental material was either immediately identified upon recovery in the field or bagged and labeled for identification at a later time. Bone and teeth identified as being non-human were discarded.

## ***Purpose***

The primary purpose for this segment of the project was to monitor, identify and conduct an in-field assessment and analysis of the human skeletal material from TC. The analysis of human remains has the potential to offer an immense amount of information pertaining to human biology and cultural practices. Demographic information, including but not limited to, ancestry, mortality and morbidity rates, age and sex percentages, disease, diet and growth rates can be extracted from skeletal remains. The extent to which these types of data can be extracted hinges on a number of variables, of which most importantly is the preservation and completeness of the skeletal material. Post-burial damage occurring prior to the 2018 excavations significantly hindered the type, quality and quantity of data available for analysis. This being said, a full attempt was made during the assessment of the Trinity Church material to recover as much biological information as possible.

## ***Laboratory Analysis***

As per protocol for this project, human skeletal analysis was conducted within the church. No skeletal material was removed from church property. The human remains were analyzed and photographed at various times between September 14<sup>th</sup> 2018 and November 25<sup>th</sup> 2019. A more in-depth assessment of the data collected during the analysis phase occurred off-site. The restrictions set down by the protocol regarding the human remains limited some aspects of data gathering, specifically related to identification processes, primarily from a lack of access to comparative material.

### ***Methodology – Skeletal Analysis***

In addition to basic identification of skeletal elements, the analysis followed standard protocol which included skeletal age, sex ancestry, and pathology where applicable. Determination of age was based on standard fusion rates for long bones (Scheuer and Black 2000), dental eruption, crown and root formation (White 2012) and linear regression formulae for fetal long bones. Sex determination was based on standards found in Bass (2005) for the long bones. Ancestry and stature estimates were not possible given the highly fragmented remains and the lack of comparative material. Pathology assessment was based on parameters found in Ortner (2003).

The calculation of minimum number of individuals (MNI) was based on six variables; age, sex, stature, side (L&R), context (location), and ancestry. The results of these analyses were used when available. MNI is used to calculate the fewest number of individuals represented by the skeletal material present from a specific context.

### ***Methodology – Recording***

All skeletal and dental material from TC was recorded based on standards, found in Buikstra and Ubelaker (1994) with modifications by the author. Following the completion of data collection in the field, all data was entered in to an Access® databased created by the author. The purpose of the database was to create a digital record of all skeletal material from TC and to make it available to authorized and interested stake holders. In order to facilitate extraction of information from the database through direct searches, each set of skeletal material was assigned three identifying codes (INV; SP#; SubSP#) that increased with specificity. The sub-reports for this appendix use this identification system mirroring the database.

### ***Methodology – Photographs (Documentation)***

All skeletal material from TC was photographed with a Canon 80D using normal settings. When needed, some material was photographed from multiple angles. All images are available upon request.

### ***Report Format***

Each set of human remains collected during the TC project are briefly discussed in separate sub-reports according to the specific INV#/SubSP#. These, with the exception of TC-13, represent single individuals.

### ***Statement of Ethics***

The excavation, analysis and handling of human skeletal material has been and still is a highly sensitive issue, often leading to polarized views regarding the rationale for excavation and examination of human remains. With this in mind, the excavation, removal and analysis of the Trinity Church skeletal material by all parties taking part in this project, was done so ethically and responsibly in accordance with the Society of American Archaeology Statement Concerning the Treatment of Human Remains (see [www.saa.org](http://www.saa.org)).

### **Executive Summary**

Human skeletal remains were encountered during the archaeological monitored excavation of test pits by construction personnel in the churchyard of Trinity Church. These test pits yielded 254 bones and 39 teeth representing a minimum of 37 individuals (see Table 1). The MNI was based on a number of variables including age, sex, coloration, side and context. The overall preservation of the skeletal material excavated between 2018 and 2019 ranged from good to poor with most bones suffering from post mortem damage (PMD) prior to the excavations of 2018.

Slightly more than 37% (94/254) of the bones and 53% (21/39) of the teeth were associated with a relatively complete child skeleton (TC-7). Of the 37 individuals recovered, 11 were classified as adults, 1 was a young adult, 1 was an adolescent or young adult, 11 were children, 3 were infants, 1 one a neonate and one was fetal (see Table 1). In addition, eight individuals were classified as NCA or Non-Child/Adolescent. These eight could only be aged to be over 17 years but could not be classified as young adults or adults due to a lack of required skeletal elements and or age markers.

Due to the highly fragmented nature of the bone material from Trinity Church, age determination, was often based solely on the overall size of the bones and fusion rates. Photographs taken of the skeletal material from Trinity Church were compared to laboratory specimens of known age. In the instant when appropriate elements for age assessment were present, children, infants and neonates were aged based on dental eruption rates, crown formation, root formation and long bone lengths. Age determination for the fetal bone was based on the linear regression formula for the femur found in Scheuer and Black (2000).

Biological sex for adults was estimated using only the humeral and femoral heads and the gonial angle of the mandible and yielded one male (TC-11), one female (TC-12), one possible female (TC-22) one indeterminate (TC-19). The remaining 33 individuals were not assessed for biological sex due to young age or lack of required elements. While ancestry estimates were not possible due to lack of required skeletal elements and the highly fragmented nature of the majority of the material, two incisors exhibited evidence of shoveling. This characteristic has been shown to be found, in some cases, almost universally in many East Asian and Native American populations but it has also been found in North African, Turkish and in some European populations, albeit in a much lower percentage.

Pathological changes were observed in three individuals with one additional individual exhibiting possible evidence of infection. Dental pathology was observed in 6 of the 11 individuals of that had teeth and was restricted to cavities, calculus, abscesses and hypoplastic defects. None of the pathological conditions observed affected the mostly complete remains of TC-7 (child).

All skeletal material removed in 2018 and 2019 was from disturbed contexts/fill with no evidence to suggest they were from *in situ* primary burials. The highly fragmented and widely dispersed skeletal material and the fill type supports this finding. Grave cuts, coffin lines, head stones and articulated remains, all characteristics of intact burials, were not present. With the exception of the two corroded nails possibly associated with the child burial, all artifacts were not related to any specific individual.



Table 1 – Phase 1 (Stage 1 and Stage 2) Sample Results (Summary)

INV	TP	B-CNT	T-CNT	AGE	SEX	MNI
TC-1	TP5	1	0	AD	NA	1
TC-2	TP4	0	1	CH	NA	1
TC-3	TP4	3	1	AD	NA	1
TC-4	TP-LB1	1	1	AD	NA	1
TC-5	TP9	16	2	AD	NA	1
TC-6	TP9	1	0	CH	NA	1
TC-7	TB-LB1	94	21	CH	NA	1
TC-8	TP3	2	0	FET	NA	1
TC-9	TP3	2	1	CH	NA	1
TC-10	TP3	1	0	CH	NA	1
TC-11	TP3	2	0	AD	M	1
TC-12	TP3	2	0	AD	F	1
TC-13	TP3	29	4	AD	NA	0
TC-14	TP3	1	0	ADOL	NA	1
TC-15	P19	2	0	INF	NA	1
TC-16	P19	6	0	AD	NA	1
TC-17	DT18-19	4	0	NEO	NA	1
TC-18	DT18-19	4	0	CH	NA	1
TC-19	P18	11	0	AD	?	1
TC-20	P18	9	0	CH	NA	1
TC-21	TP2-EXT	7	0	YAD	NA	1
TC-22	TR1	7	0	NCA	?	1
TC-23	TP4N	1	3	INF	NA	1
TC-24	TP4N	6	0	NCA	NA	1
TC-25	TP6N	4	0	NCA	NA	1
TC-26	TP8	2	3	CH	NA	1
TC-27	TP3	1	1	AD	NA	1
TC-28	TP6S	0	1	CH	NA	1
TC-29	TR9	3	0	NCA	NA	1
TC-30	DTRN	2	0	NCA	NA	1
TC-31	NSDTSS	3	0	NCA	NA	1
TC-32	NSDB	2	0	NCA	NA	1
TC-33	SSCDT	2	0	INF	NA	1
TC-34	SSCDT	3	0	CH	NA	1
TC-35	SSCDT	9	0	AD	NA	1
TC-36	SSCDT	1	0	NCA	NA	1
TC-37	SSCDTEE	1	0	CH	NA	1
TC-38	SSCDTEE	9	0	AD	NA	1
TOTAL	NA	254	39	NA	NA	37

**Key:** TC=Trinity Church; TP=Test-pit; B-CNT=Bone Count; T-CNT-Tooth Count; MNI= Minimum Number of Individuals; AD=Adult; ADOL=Adolescent; CH=Child; NEO=Neonate; FET=Fetal; NCA=Non-Child/Adolesc

## 1 (TC-18-TP5-1)

### Summary overview

These remains consist of the complete left metacarpal 1 (see Figure 1) and a single bone fragment of an adult individual (see Table 2). The material was found in fill at a depth of 3.8 and 4 feet BGS in Test Pit 5. No grave or grave outline was identified. Age determination was based on overall size and fusion. Sex determination, ancestry and stature estimates were not possible.



Figure 1 - TP5 - MC1 and Bone Fragment

Table 2 - Metacarpal

BONE	SIDE	COMP	PATH	CNT	COMMENTS
MC1	Left	1	NO	1	Bone is complete and in good condition. No pathology. MxL=43.34

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; MC=Metacarpal; MxL=Maximum Length

**Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

## TC-2/TC-3 (TC-18-TP4-1/TC-18-TP4-2)

### Summary Overview

The skeletal remains from TP4 consist of three bones and two teeth constituting a MNI of two, one child (TC-2) and one adult (TC-3). All material is from fill. No grave or grave outline was identified. TC-2 (TC-18-TP4-1) is represented by a single deciduous incisor (T64-see figure 2 and Table 3). Age determination for TC-2 was based on dental eruption, and crown/root formation of tooth 64 giving an estimated age of 2-3 years old. Minimal dental attrition present. The remainder of the skeletal material from TP4 consisted of bone fragments and single tooth from at least one adult individual (see Tables 4-5 and Figure 3). No abnormalities were observed affecting the bone material. The tooth exhibited evidence of calculus affecting multiple surfaces as well as at least one hypoplasia. Age determination for the adult was based on overall size and fusion. Estimates of ancestry, stature and sex were not possible.

### TC-2 (TC-18-TP4-1)



Figure 2 (TC-2) T64

Table 3 – Dentition (TC-2)

T-Type	T#	SCR	Path	ATT	CNT	COMMENTS
IN	64	1	NO	YES	1	Tooth is complete in good condition.

Key: T-Type=Tooth Type; T#=Tooth Number; SCR=Score (1=in occlusion); PATH=Pathology; ATT=Attrition; CNT=Count; IN=Incisor



Figure 3 (TC-3) From left to right: T11; Metacarpal/Rib; Distal Hand Phalange

Table 4 – Bone (TC-3)

BONE	SIDE	COMP	PATH	CNT	COMMENTS
MC-ND	SND	3	NO	1	Bone in poor condition missing the proximal and distal end along with parts of the proximal and distal 1/2 shaft. Non-identifiable but not MC 1. Probably MC4 from the right side.
PHD-ND	SND	1	NO	1	Bone is complete and in good condition. Likely 2-5 but not #1.
RIB-ND	Left	4	NO	1	Single unidentified rib end. Likely from the lower ribs. Not rib 1-2.

Key: COMP=Completeness; PATH=Pathology; CNT=Count; MC=Metacarpal; ND=Not Determined; PHD=Phalange Hand Distal  
Scoring System (COMP): 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

Table 5 – Dental Inventory (TC-3)

T-Type	T#	SCR	Path	CAR	CAL	HYPO	ATT	CNT	COMMENTS
CA	11	2	YES	NO	YES	YES	NA	1	Tooth is complete in good condition. Minimal calculus on the mesial, lingual and labial surface. One hypoplasia present. Moderate wear.

Key: T-Type=Tooth Type; T#=Tooth Number; SCR=Score (eruption 1=Erupted in occlusion; 2=Partial or no eruption not in occlusion);  
PATH=Pathology; CAR=Caries (cavities); HYPO=Hypoplasia; ATT=Attrition; CNT=Count; CA=Canine

### TC-4 (TC-18-TPLB1- 1)

#### Summary Overview

These remains consist of a single canine and a partial right calcaneus (see Figure 4 and Tables 6-7) from an adult individual excavated from the upper fill of TP-LB1 between 1.5 and 2 feet BGS. Evidence of dental pathology (hypoplasia and calculus present). No bone pathology. Age determination is based on the overall size of the bone and the amount of dental attrition. Sex determination, ancestry assessment and stature reconstruction were not possible.



Figure 4 – Canine; Calcaneus



Table 6 – Tarsals

BONE	SIDE	COMP	PATH	CNT	COMMENTS
CAL	LEFT	4	NO	1	Bone in poor condition with only the superior articular surfaces remaining. All other part missing PM.

**Key:** COMP=Completion; PATH=Pathology; CNT=Count; CAL=Calcaneus; **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

Table 7 – Dentition

T-Type	T#	SCR	PATH	CAL	HYPO	ATT	CNT	COMMENTS
CA	27	1	YES	YES	YES	YES	1	Tooth in good condition. Moderate to heavy calculus on the lingual surface. At least 3 LEH present. Moderate wear.

**Key:** T-Type=Tooth Type; T#=Tooth Number; SCR=Score (1=In occlusion); PATH=Pathology; HYPO=Hypoplasia; ATT=Attrition; CNT=Count; CA=Canine

### TC-5/TC-6 (TC-18-TP9-1/TC-18-TP9-2)

#### Summary Overview

Skeletal material from TP9 consists of at least two individuals; one adult (TC-5-see Table 8-9) and one child (TC-6-see Table 10) represented by 17 bones and 2 teeth. All human remains were encountered in fill between 2.5 and 3 feet BGS. No grave was detected. With the exception of a couple of hand bones, the material from TP9 is highly fragmented and in poor condition (see Figure 5). In addition to the bones that were identifiable, 11 bone fragments were also recovered. Age determination for both the child and the adult was based on overall size fusion rates. Sex determination and stature reconstruction were not possible due to the fragmentary state of the material and lack of comparative material. Ancestry assessment was not possible for the bone material. Possible shoveling of T9 potentially links this tooth with an individual of East Asian descent.

Dental material consisted of two adult teeth (T9 and T14). Both teeth exhibited pathology. Hypoplastic defects (x2) were observed on the labial surface of T9 (see Figure 5) indicating that this individual suffered at least two extended periods of stress during the development of the enamel for this tooth. In addition, ante-mortem chipping was observed. The lingual surface of T9, displayed possible shoveling morphology. T14 showed evidence for a cavity on the occlusal surface in addition to calculus and possible amelogenesis imperfecta in the form of extreme enamel pitting and lack of formation (see Figure 5).



Figure 5 – Dental and Bone Fragments from TP9

Left to right: Molar (T14); Incisor (T9); MT 2-3 (R); Bone fragments; Proximal hand phalanges; Femur (Child)

Table 8 – Bone Inventory (TC-5)

BONE	SIDE	COMP	PATH	CNT	COMMENTS
ZYG	Right	2	NO	1	Bone in fair condition missing the inferior 1/2.
FIB	SND	4	?	1	Bone in poor condition with only a small section of the shaft present. Possible healed ABG.
RAD	Left	4	NO	1	Bone in poor condition with only the radial tuberosity present.
RAD	Right	4	NO	1	Bone in poor condition with only the distal 1/8 of the shaft and epiphysis present.
HUM	SND	4	NO	1	Bone is poor condition with only a small fragment of the distal epiphyseal surface remaining.
MT2	Right	2	NO	1	Bone in fair condition missing the distal end. Goes with MT3.
MT3	Right	2	NO	1	Bone in fair condition missing the distal end. Goes with MT2.
PHP5	?	1	NO	1	Bone in good condition missing small fragments. MxL=34.20mm
PHP-ND	?	1	NO	1	Bone in good condition. Probably #2/3. MxL=43.16mm
CER 3-5	NA	3	NO	1	Bone in poor condition missing the right 1/2 and the inferior surface of the body.
CER 3-5	NA	4	NO	1	Bone in poor condition with only a small fragment of the superior body present.
CER 3-5	NA	4	NO	1	Bone in poor condition with only the left inferior articular facet present. Does not belong with the other 2 cervical vertebra.
HAM	LEFT	4	NO	1	Bone in poor condition. Missing all except for the hook.
R3-12	L&R	4	NO	3	Two shaft fragments and one vertebral end fragment. The rib end is from the right side and one of the rib shafts is from the left side. The final shaft fragment was not sided.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; ZYG=Zygomatic; FIB=Fibula; RAD=Radius; HUM=Humerus; MT=Metatarsal; PHP= Proximal Hand Phalange; ND=Not Determined; CER=Cervical; HAM=Hamate; R=Rib **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4= <25%

Table 9 – Dentition (TC-5)

T-Type	T#	SCR	PATH	CAR	HYPO	ATT	OTH	CNT	COMMENTS
IN	9	2	Yes	No	Yes	Yes	Yes	1	Tooth complete and in good condition. LEH present. Minimal wear. Possible shoveling. Pre-mortem chipping
MO	14	2	Yes	Yes	Yes	Yes	No	1	Tooth in good condition. Cavity on occlusal and buccal surfaces. Minimal calculus all surfaces except for the OCC. LEH present. Possible Amelogenesis Imperfecta.

**Key:** T-Type=Tooth Type; T#=Tooth Number; SCR=Score (eruption 1=Erupted in occlusion; 2=Partial or no eruption not in occlusion); PATH=Pathology; CAR=Caries (cavities); HYPO=Hypoplasia; ATT=Attrition; OTH=Other; CNT=Count; IN=Incisor; MO=Molar

Table 10 – Long Bones (TC-6)

BONE	SIDE	COMP	PATH	CNT	COMMENTS
FEM	SND	4	NO	1	Bone in poor condition with only a small portion of the shaft remaining.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; FEM=Femur; SND=Side Not Determined  
Scoring System (COMP): 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

## TC-7 (TC-18-TPLB1-CH-1)

### Summary Overview

An articulated skeleton of a child (TC-7) between the ages of 1-1.5 years old was exposed during testing TP LB-1 on the southeast side of the church's Manning Wing at 2.9 feet BGS (see Figure 6). Above the child was a considerable amount of fill. TC-7 was supine with the head to the west and the feet to the east. Preservation ranged from excellent to poor with more fragile elements (cranium) showing considerable PMD in part from soil compression. With the exception of two nails, possibly indicating an original coffin burial, no grave goods, architecture, or grave outline was observed. While the skeleton was undisturbed (articulated), based on the soil composition, the skeleton had clearly been moved from its original grave and was buried in fill. Ninety-four bones and 21 teeth were recovered (see regional-based tables and images for more detailed information) in addition to at least 16 cranium fragments and from other regions of the skeleton.

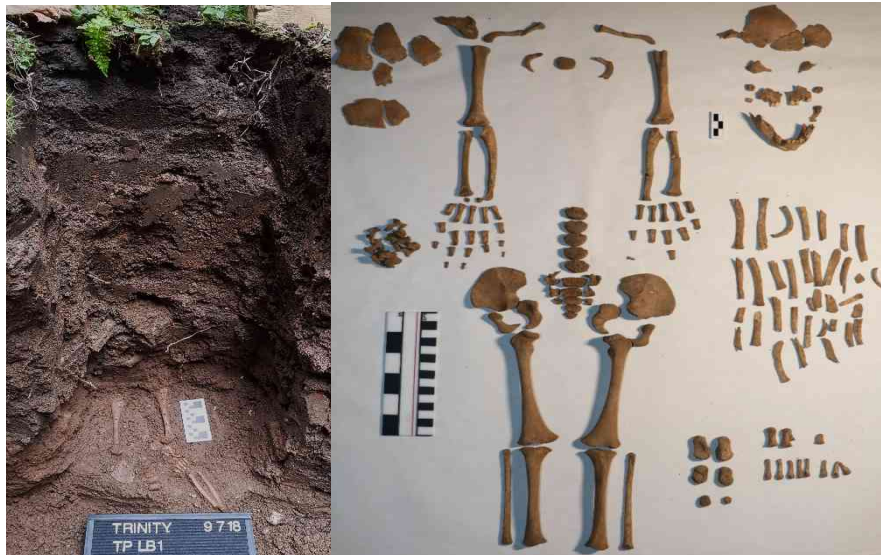


Figure 6 – Child Skeleton  
Left to Right-TC-7 prior to removal and post removal during analysis

### Skull Bones

The skull was highly fragmented due to the overall fragility of and thinness of bones (see Figure 7) in addition to post-depositional damage (compression). Seven of the 28 bones of the skull were recovered (see table 11). In addition to the identified bones, there were 16 cranial fragments not identifiable to a specific skull bone. No evidence abnormalities or pathology.



Figure 7 – Frontal Bone

Table 11 – Skull

BONE	SIDE	COMP	PATH	CNT	COMMENTS
FRO	L&R	3	NO	1	Bone in fair condition missing posterior portion. The orbits are approx. 50% complete.
PAR	Right	3	NO	1	Bone in poor condition with only the anterior portion of the bone present.
TEM	Left	4	NO	1	Bone in poor condition missing all except for part of the external auditory meatus.
ZYG	Left	3	NO	1	Bone in poor condition with only part of anterior portion of the orbital region present.
ZYG	Right	2	NO	1	Bone in fair condition but mostly complete. Missing approx. 25% of the bone.
MAX	L&R	3	NO	1	Bone in fair to poor condition missing post deciduous M1. Hard palate is missing PM.
MAN	L&R	1	NO	1	Bone is in good condition missing the left body post M1.

Key: COMP=Completion; PATH=Pathology; CNT=Count; FRO=Frontal; PAR=Parietal; TEM=Temporal; ZYG=Zygomatic; MAX=Maxilla; MAN=Mandible. Scoring System (COMP): 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%



### ***Vertebra***

Of the 33 vertebra comprising the spinal column, 16 identifiable bones were recovered (see Table 12). Post-mortem damage mainly affected the cervical and thoracic vertebra sparing the lumbar and sacral vertebra (see figure 8). All elements exhibited a partial to complete lack of fusion. Age based on fusion rates for the vertebra suggest that this child was less than 2 years old. No abnormalities were detected.



Figure 8 - Unfused sacrum

Table 12 - Vertebra

BONE	COMP	PATH	CNT	COMMENTS
CER 3-6	4	NO	1	Bone in poor condition missing all except for part of the right arch. Not C1, 2 or 7.
CER 3-6	4	NO	1	Bone in poor condition missing all except for part of the right arch. Not C1, 2 or 7.
CER 3-6	3	NO	1	Bone in poor condition missing all except for part of the right arch. Not C1, 2 or 7.
THR 2-9	4	NO	1	Bone in poor condition missing all except for 25% of vertebral body. Non T1, T10-12.
THR 2-9	4	NO	1	Bone in poor condition missing all except for 25% of vertebral body. Non T1, T10-12.
THR 2-9	4	NO	1	Bone in poor condition missing all except for of vertebral body. Non T1, T10-12.
LUM 1	1	NO	1	Bone complete and in good condition. No fusion between body and arches. Arches broken PM.
LUM 2	1	NO	1	Bone complete and in good condition. No fusion between body and arches. Arches broken PM.
LUM 3	1	NO	1	Bone complete and in good condition. No fusion between body and arches. Arches broken PM.
LUM 4	1	NO	1	Bone complete and in good condition. No fusion between body and arches. Arches broken PM.
LUM 5	1	NO	1	Bone complete and in good condition. No fusion between body and arches. Arches broken PM.
SAC 1	1	NO	1	Bone is complete and in good condition. No fusion body to arches or arch to arch.
SAC 2	1	NO	1	Bone is complete and in good condition. No fusion body to arches or arch to arch.
SAC 3	1	NO	1	Bone is complete and in good condition. No fusion body to arches or arch to arch.
SAC 4	1	NO	1	Bone is complete and in good condition. No fusion body to arches. No arches present.
SAC 5	1	NO	1	Bone is complete and in good condition. No fusion body to arches. No arches present.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; CER=Cervical; THR=Thoracic; LUM=Lumbar; SAC=Sacral

**Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

### ***Long Bones/Pectoral Girdle***

All the bones of the upper and lower limbs (n=10) and pectoral girdle (n=4) were recovered (see Table 13) and with the exception of the scapula were found in good condition (see Figure 9). Epiphyseal fusion was completely lacking for all limb bones and the pectoral girdle. Maximum length measurements were taken of the limb bones that were complete and used to assess age for this individual (see Table 13 and the section on age determination). No pathological conditions were identified.



Figure 9 – Upper and Lower Limb Bones  
Left to Right : Humerus; Radius; Ulna; Femur; Tibia; Fibula

Table 13 – Long Bones/Pectoral Girdle

BONE	SIDE	COMP	PATH	MxL	AGE	CNT	COMMENTS
HUM	Right	1	NO	109.9	1-1.5	1	Bone is complete and in good condition. Missing the epiphyses PM (unfused).
HUM	Left	1	NO	100.4	1-1.5	1	Bone is mostly complete in fair condition missing the proximal end PM. The epiphyses are missing (unfused). MxL is without the proximal end.
RAD	Right	1	NO	86.7	1-1.5	1	Bone is complete and in good condition. Missing the epiphyses PM (unfused)
RAD	Left	1	NO	86.47	1-1.5	1	Bone in fair condition missing fragments from proximal end. Bone unfused (missing epiphyses PM). Damage does not affect measurement.
ULN	Right	1	NO	95.81	1-1.5	1	Bone is complete but broken PM at distal end-does not affect measurement. Unfused at prx and distal ends-epiphyses missing PM.
ULN	Left	1	NO	96.96	1-1.5	1	Bone is complete but broken PM mid-shaft end but does not affect measurement. Unfused at proximal and distal ends-epiphyses missing PM.
FEM	Left	1	NO	139.7	1-1.5	1	Bone is complete and in good condition. Epiphyses are present and unfused.
FEM	Right	1	NO	139.7	1-1.5	1	Bone is complete and in good condition. Epiphyses are present and unfused.
TIB	Left	1	NO	117.9	1-1.5	1	Bone is complete and in good condition. Unfused proximal and distal ends.
TIB	Right	1	NO	117.6	1-1.5	1	Bone is complete and in good condition. Unfused proximal and distal ends.
FIB	Left	1	NO	114.8	1-1.5	1	Bone is mostly complete in fair condition missing fragments from the proximal end (affects measurement). Epiphyses missing PM and unfused.
FIB	Right	1	NO	113.7	1-1.5	1	Bone is complete and in good condition missing small fragments from the proximal end (does not affect measurement).
CLA	Right	1	NO	NA	NA	1	Bone is complete in good condition-broken mid-shaft. Unfused. MxL 68.28.
CLA	Left	1	NO	NA	NA	1	Bone is mostly complete and in good condition missing small fragments from the lateral end. Does affect measurement (64.26)
SCA	Right	3	NO	NA	NA	1	Bone is in fair condition missing the spine, coronoid and acromion processes and the supraspinous fossa. No fusion of the glenoid fossa.
SCA	Left	4	NO	NA	NA	1	Bone is in poor condition missing all except for fragments of the body and acromion processes.

**Key:** COMP=Completeness; PATH=Pathology; MxL=Maximum Length; CNT=Count; HUM=Humerus; RAD=Radius; ULN=Ulna; FEM=Femur; TIB=Tibia; FIB=Fibula; CLA=Clavicle; SCA=Scapula **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

### Pelvis

The left and right ilium, ischium and pubis (see Figure 10) were found to be complete and in good condition with minimal PMD (see Table 14). All three bones (left and right side) were completely unfused. No evidence of pathology was observed. Age determination based on size indicated that these bones were from an individual between 1 and 2 years old.



Figure 10 – Pelvis  
Left to Right: Ilium; Ischium; Pubis

Table 14 – Pelvis

BONE	SIDE	COMP	PATH	CNT	COMMENTS
ILI	Left	1	NO	1	Bone is complete and in good condition. No fusion between individual bones.
ILI	Right	1	NO	1	Bone is complete and in good condition. No fusion between individual bones.
ISC	Left	1	NO	1	Bone is complete and in good condition. No fusion between individual bones.
ISC	Right	1	NO	1	Bone is complete and in good condition. No fusion between individual bones.
PUB	Left	1	NO	1	Bone is complete and in good condition. No fusion between individual bones.
PUB	Right	1	NO	1	Bone is complete and in good condition. No fusion between individual bones.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; ILI=Ilium; ISC=Ischium; PUB=Pubis

**Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

### ***Hand and Foot Bones***

Bones of the hand and foot (see Figure 11) constituted the largest percent of bones recovered for TC-7 at 52% or 49/94 (see Table 15-16). Of the 49 hand and foot bones, 43 (20 Metacarpals; 21 Phalanges; 2 Carpals) were from the hand and wrist (see Figure 11) with the remaining bones being from the ankle (6 tarsals). Overall, the majority of bones were found to be complete and in good condition with minimal PMD. Epiphyseal fusion was lacking for all bones which is expected for an individual this young. No pathological conditions were detected.



Figure 11 – Left and right hand



Table 15 – Metacarpal/Metatarsal/Phalanges

BONE	SIDE	COMP	PATH	CNT	COMMENTS
MC1	Left	1	NO	1	Bone complete and in good condition. No fusion. Epiphysis missing PM. 16.61.
MC2	Left	1	NO	1	Bone complete and in good condition. No fusion. Epiphysis missing PM. 25.44
MC3	Left	1	NO	1	Bone complete and in good condition. No fusion. Epiphysis missing PM. 27.40
MC4	Left	1	NO	1	Bone complete and in good condition. No fusion. Epiphysis missing PM. 22.03
MC5	Left	1	NO	1	Bone complete and in good condition. No fusion. Epiphysis missing PM. 20.26
MC1	Right	1	NO	1	Bone complete and in good condition. No fusion. Epiphysis missing PM. 16.71.
MC2	Right	1	NO	1	Bone complete and in good condition. No fusion. Epiphysis missing PM. 25.46
MC3	Right	1	NO	1	Bone complete and in good condition. No fusion. Epiphysis missing PM. 24.38
MC4	Right	1	NO	1	Bone complete and in good condition. No fusion. Epiphysis missing PM. 22.15
MC5	Right	1	NO	1	Bone complete and in good condition. No fusion. Epiphysis missing PM. 20.05
MT1	Left	1	NO	1	Bone complete and in good condition. No fusion. Epiphysis missing PM.
MT1	Right	1	NO	1	Bone complete and in good condition. No fusion. Epiphysis missing PM.
MT2	Right	3	NO	1	Bone in poor condition missing approx. 50% PM.
MT2	Left	3	NO	1	Bone in poor condition missing approx. 50% PM.
MT3	Left	1	NO	1	Bone in fair condition missing fragments from the distal end. No fusion.
MT3	Right	1	NO	1	Bone in fair condition missing fragments from the distal end. No fusion.
MT4	Right	1	NO	1	Bone in fair condition missing distal end. No fusion.
MT4	Left	1	NO	1	Bone in fair condition missing distal end. No fusion.
MT5	Left	1	NO	1	Bone in good condition with some PMD to the distal end. No fusion.
MT5	Right	1	NO	1	Bone in good condition with some PMD to the distal end. No fusion.
PHP1	Right	1	NO	1	Bone is complete and in good condition. No fusion of proximal epiphysis.
PHP2	Right	1	NO	1	Bone is complete and in good condition. No fusion of proximal epiphysis.
PHP3	Right	1	NO	1	Bone is complete and in good condition. No fusion of proximal epiphysis.
PHP4	Right	1	NO	1	Bone is complete and in good condition. No fusion of proximal epiphysis.
PHP5	Right	1	NO	1	Bone is complete and in good condition. No fusion of proximal epiphysis.
PHP1	Left	1	NO	1	Bone is complete and in good condition. No fusion of proximal epiphysis.
PHP2	Left	1	NO	1	Bone is complete and in good condition. No fusion of proximal epiphysis.
PHP3	Left	1	NO	1	Bone is complete and in good condition. No fusion of proximal epiphysis.
PHP4	Left	1	NO	1	Bone is complete and in good condition. No fusion of proximal epiphysis.
PHP5	Left	1	NO	1	Bone is complete and in good condition. No fusion of proximal epiphysis.
PHI2	Right	1	NO	1	Bone is complete and in good condition. No fusion of proximal epiphysis.
PHI3	Right	1	NO	1	Bone is complete and in good condition. No fusion of proximal epiphysis.
PHI4	Right	1	NO	1	Bone is complete and in good condition. No fusion of proximal epiphysis.
PHI5	Right	1	NO	1	Bone is complete and in good condition. No fusion of proximal epiphysis.
PHI3	Left	1	NO	1	Bone is complete and in good condition. No fusion of proximal epiphysis.
PHD1	Right	1	NO	1	Bone is complete and in good condition. No fusion of proximal epiphysis.
PHD2	Right	1	NO	1	Bone is complete and in good condition. No fusion of proximal epiphysis.
PHD3	Right	1	NO	1	Bone is complete and in good condition. No fusion of proximal epiphysis.
PHD5	Right	1	NO	1	Bone is complete and in good condition. No fusion of proximal epiphysis.
PHD5	Left	1	NO	1	Bone is complete and in good condition. No fusion of proximal epiphysis.
PHD5	?	1	NO	1	Bone is complete and in good condition. No fusion of proximal epiphysis.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; MC=Metacarpal; MT=Metatarsal; PHP=Phalange Hand Proximal; PHI=Phalange Hand Intermediate; PHD=Phalange Hand Distal **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

Table 16 – Carpals and Tarsals

BONE	SIDE	COMP	PATH	CNT	COMMENTS
CAL	Left	1	NO	1	Bone complete and in good condition with small amount of PMD.
CAL	Right	1	NO	1	Bone complete and in good condition with small amount of PMD.
TAL	Right	1	NO	1	Bone complete and in good condition with small amount of PMD.
TAL	Left	1	NO	1	Bone complete and in good condition with small amount of PMD.
TAR-UNI	SND	1	NO	1	Bone is complete but not identified to a specific TAR.
TAR-UNI	SND	1	NO	1	Bone is complete but not identified to a specific TAR.
CAR-UNI	Right	1	NO	1	Bone is complete but not identifiable.
CAR-UNI	Right	1	NO	1	Bone is complete but not identifiable.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; TAR=Tarsal; CAR=Carpal; SND=Side Not Determined

**Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

### Dentition

TC-7 retained a mixture of deciduous and permanent teeth from both the maxilla and mandible (see Figure 12 and Table 17). All of the teeth from this individual were found to be in good condition. Of the 20 deciduous teeth expected to be present in an individual of this age, 18 were recovered. The remaining two deciduous teeth (T52 and 68) were lost post-mortem. In addition to the deciduous teeth, three permanent teeth were recovered. These teeth showed incomplete crown and root formation, consistent with an individual of this age. Crown and root formation and dental eruption was used to help determine the age of TC-7. Based on these methods, TC-7 was approximately 1.5 years old. No dental pathology was observed, with the exception of a few deciduous teeth showing possible cavities and or hypoplastic defects (see Table 17).



Figure 12 – Dentition

Table 17 – Dentition

T-Type	T#	SCR	PATH	CAR	HYPO	ATT	CNT	COMMENTS
MO	51	2	No	NA	No	NA	1	Tooth in fair condition. Not in situ. Tooth not erupted. Crown complete.
CA	53	2	No	NA	No	NA	1	Tooth partially erupted in good condition. Root is 50% complete.
IN	54	1	No	No	?	Yes	1	Tooth in good condition. Root 95% complete. Minimal wear. Possible hypoplasia.
IN	55	1	No	?	No	Yes	1	Tooth in good condition. Crown is complete - root 95%. Dark stains-lingual surface. Minimal wear. T8 is observable in its crypt.
IN	56	1	No	?	No	Yes	1	Tooth complete-good condition. Root 95% complete. Minimal wear. T9 is observable in crypt. Dark stains on the lingual surface.
IN	57	1	No	?	No	Yes	1	Tooth complete-good condition. Crown is complete - root 95%. Minimal wear. Dark stains-lingual surface.
CA	58	2	No	NA	No	NA	1	Tooth is complete-good condition. Partial eruption. Root is 50% complete.
MO	59	1	No	No	No	Yes	1	Tooth is complete-good condition. Root 95% complete. Minimal wear
MO	60	2	No	NA	No	NA	1	Tooth is complete-not erupted. Crown is complete- root 25% complete.
MO	61	2	No	NA	No	NA	1	Tooth is complete-not erupted. Crown is complete- root 25%.

Table 17 – Dentition (continued)

T-Type	T#	SCR	PATH	CAR	HYPO	ATT	CNT	COMMENTS
MO	62	1	No	No	No	Yes	1	Tooth is complete and in good condition. Crown is complete. Minimal wear.
CA	63	2	No	NA	No	NA	1	Tooth is complete-good condition. Partial eruption. Crown is complete.
IN	64	1	No	No	No	Yes	1	Tooth is complete-good condition. Minimal wear.
IN	65	1	No	No	No	Yes	1	Tooth is complete-good condition. Minimal wear with no dentine exposure.
IN	66	1	No	No	No	Yes	1	Tooth is complete-good condition. Minimal wear with no dentine exposure.
IN	67	1	No	No	No	Yes	1	Tooth is complete-good condition. Minimal wear with no dentine exposure.
MO	69	1	No	No	No	Yes	1	Tooth is complete-good condition. Minimal wear. Crown complete.
MO	70	2	NA	NA	NA	NA	1	Tooth not completely observable. Crypt open exposing just the top of the crown.
IN	8	2	NA	NA	NA	NA	1	Tooth crown is observable. Partial completion of crown (25%-50%).
IN	9	2	NA	NA	NA	NA	1	Tooth crown is present and in crypt. Partial completion of crown (25%-50%).
MO	30	2	NA	NA	NA	NA	1	Tooth is observable with only small opening exposing apex of crown cusps.

Key: T-Type=Tooth Type; T#=Tooth Number; SCR=Score (eruption 1=Erupted in occlusion; 2=Partial or no eruption not in occlusion); PATH=Pathology; CAR=Caries (cavities); HYPO=Hypoplasia; ATT=Attrition; CNT=Count; MO=Molar; CA=Canine; IN=Incisor

### ***Age Determination – Composite***

Age determination was based on dental eruption, crown formation, root formation and maximum length of complete long bones (see Table 18). All of the long bones returned an age between 1 and 1.5 years (AVG 1.25). Age based on dentition gave an age of approximately 1.5 years. It is likely that this individual was between 1 and 2.5 (2.5 years is based on the +/- for dental eruption).

Table 18 – Age Determination

D-ERUPTION	C- FORM	LB-MxL	COM-AGE	CNT	COMMENTS
1.5	1.5	1.25	1.375	1	Average age 1.375 with a range of between 1 and 2.5 years.

Key: D=Dental; C=Crown; LB=Long Bone; MxL=Maximum Length; COM=Composite; CNT=Count.

## **TC-8 – TC-14**

### **(TC-18-TP3-1; TC-18-TP3-2; TC-18-TP3-3; TC-18-TP3-4; TC-18-TP3-5; TC-18-TP3-6; TC-18-TP3-7)**

#### **Summary Overview**

The skeletal material from TP3 consisted of 39 identifiable bones, 5 teeth, 10 long bone fragments and 35 bone fragments, representing a minimum number of six individuals (see Figures 13-22 and Tables 19-31). Of these six, two were adults, two were children, one was aged to be an adolescent, and one was fetal. Sex determination was possible for two adults yielding one male and one female (see Tables 25 and 27). Age determination was based on long bone length, dental eruption and formation, fusion and general bone size. Numeric age was not possible. Ancestry assessment, with the exception of T9 showing possible shovelings (see TC-13), was not possible. None of the bone material showed pathology. Of the five teeth from TP3, three showed pathological conditions (see TC-13). The highly fragmented state of all adult long bones and the lack of comparison material, did not allow for stature reconstruction. All bone and dental remains were found in fill at a maximum depth of 3.2 feet BGS. With the exception of the TC-13, all other INV# represent single individuals. All individuals are described according to INV number below.



## TC-8 (TC-18-TP3-1)

### Summary Overview

These remains consist (TC-8) of the complete left fetal femur, aged to be 38 week in utero, and 2 cranial fragments (See Figure 13 and Table 19) representing at least one individual. There is no direct connection between these remains, they were linked solely on the thinness of the cranial bones and the fetal age of the femur. No pathology was observed.



Figure 13 – Left Femur and cranial fragments

Table 19 – Long Bones and Skull (TC-8)

BONE	SIDE	COMP	PATH	MxL	CNT	COMMENTS
FEM	Left	1	NO	74.7	1	Bone is complete in good condition. Age determination based on MxL=38 weeks in utero.
PAR	SND	4	NO	NA	1	Bone in poor condition. 2 fragments-matched.

Key: COMP=Completeness; PATH=Pathology; MxL=Maximum Length; CNT=Count; FEM=Femur; PAR=Parietal; NA=Not Applicable; SND=Side Not Determined. Scoring System (COMP): 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

## TC-9 (TC-18-TP3-2)

### Summary Overview

These remains consist of two bones and one tooth all from in child aged to be approximately 2.5-3 years old (see Figure 14 and Tables 20-21). Age determination was based solely on the complete eruption of T54 and the overall size of the bones. Sex determination was not possible due to the age status of the individual. No bone or dental pathology was detected.



Figure 14 – Child remains

Table 20 – Skull Bones and Vertebra (TC-9)

BONE	SIDE	COMP	PATH	CNT	COMMENTS
FRO	L&R	4	NO	1	Frontal consists of 2 orbital fragments-one left and one right. No connection between the fragments. Bone in poor condition. Not entirely clear if these orbits belong to the same person.
THR 3-9	NA	3	NO	1	Bone in fair condition missing arches PM. No fusion.

Key: COMP=Completeness; PATH=Pathology; CNT=Count; FRO=Frontal; THR=Thoracic  
Scoring System (COMP): 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

Table 21 – Dentition (TC-9)

T-TYPE	T#	SCR	PATH	ATT	CNT	COMMENTS
IN	54	1	No	Yes	1	Tooth complete-good condition. Not <i>in situ</i> . Minimal wear.

**Key:** T-Type=Tooth Type; T#=Tooth Number; SCR=Score (eruption 1=Erupted in occlusion); PATH=Pathology; ATT=Attrition; CNT=Count; IN=Incisor

### TC-10 (TC-18-TP3-3)

#### Summary Overview

These remains consist of a fragment of the orbital region of a child's frontal bone (see Figure 15 and Table 22). Age determination was based solely on the size and thickness of the bone. Morphological sex determination was not possible due to the young age of this individual. No pathological conditions were observed.



Figure 15 – Frontal Bone (Orbit)

Table 22 – Skull Bones (TC-10)

BONE	SIDE	COMP	PATH	CNT	COMM
FRO	Left	4	NO	1	Bone in poor condition missing all except for part of the left orbit. 6622-6623

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; FRO=Frontal **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

### TC-11 (TC-18-TP3-4)

#### Summary Overview

These remains consist of the very fragmented left and right humeri (see Figure 16 and Table 23). The right humerus contains the proximal end, including the head allowing of a maximum diameter of measurement (used for sex determination). Based on this measurement (47.9mm) it was determined that the right humerus was likely from a male individual. All that remains of the left humerus is the lesser tubercle and was matched to the right based on size and coloration. Age determination was based on fusion which suggested that TC-11 was over 22 years old. Stature reconstruction was not possible due to incompleteness of the bones and lack of comparative material. No pathology was detected.



Figure 16 – Right and Left Humerus

Table 23 – Long Bones (TC-11)

BONE	SIDE	COMP	PATH	MxD	CNT	COMMENTS
HUM	Right	4	NO	47.9	1	Bone in poor condition with only the proximal epiphysis and neck remaining. MxD of head suggest Male.
HUM	Left	4	NO	NA	1	Bone in poor condition with only part of the neck present.

Key: COMP=Completeness; PATH=Pathology; MxD=Maximum Diameter; CNT=Count; HUM=Humerus; PAR=Parietal; NA=Not Applicable  
 Scoring System (COMP): 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

### TC-12 (TC-18-TP3-5)

#### Summary Overview

These remains consist of the proximal end of the left humerus and the complete mandible of an adult female individual (see Figure 17 and Table 24). The left humerus is missing the entire bone post the humeral neck. The mandible was found to be in good complete and in good condition but was broken post-mortem. No teeth were recovered. Extensive resorption of the alveolar sockets (post-T22 and T27) was identified with 11 of the 16 sockets sealed ante-mortem. The presence of the head allows for sex determination using the maximum diameter. This method yielded a MxD of 42.5mm suggesting that this humerus was from a female individual. The morphology of the mandible showed characteristics of associated with a female, specifically the regions of the mental eminence (chin) and the gonial angle. Age determination was based on the fusion of the proximal end of the humerus and the resorption of the alveolar sockets. Using these factors for age assessment, it was determined that TC-12 was older than 22. A specific numeric age, however, could not be obtained. Reconstruction of stature and ancestry were not possible due to the fragmentary nature of the material and a lack of comparative material. Other than a bone abscess associated with T27, no bone pathology was detected.



Figure 17 – Humerus and Mandible

Table 24 – Skull and Long Bones (TC-12)

BONE	SIDE	COMP	PATH	MxD	CNT	COMMENTS
MAN	L&R	1	NO	NA	1	Bone is complete and in good condition but broken into 3 pieces PM. Resorption of 11 tooth sockets. Abscess associated with T27.
HUM	Left	4	NO	42.5	1	Bone in poor condition missing all except for proximal end. MxD suggest female.

Key: COMP=Completeness; PATH=Pathology; MxD=Maximum Diameter; CNT=Count; HUM=Humerus; MAN=Mandible; NA=Not Applicable; Scoring System (COMP): 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

### TC-13 (TC-18-TP3-6)

#### Summary Overview

The skeletal remains from TC-13 consist of the cranial and post-cranial bone fragments (n=29) and dental material (n=4) that could belong with TC-11 or TC-12 (the dental material is not likely associated with T12). It is possible, however, that the bones and teeth from TC-13 represent additional individuals. All skeletal material is likely from adult or



young adult individuals (see Figures 18-22 and Tables 25-29). None of the bones are from juvenile individuals. Age determination was based on bone size, fusion and dental eruption. Numeric ages were not possible. Sex determination and stature reconstruction methods could not be used due the fragmented state of the bones. Ancestry assessment was only possible for T9 (incisor), which showed possible shoveling, a morphological characteristic often found in East Asian populations (see Figure 22). Dental pathology, in the form of cavities, was identified on three of the four teeth from T-13 (see Table 29). Evidence of bone pathology was not found.

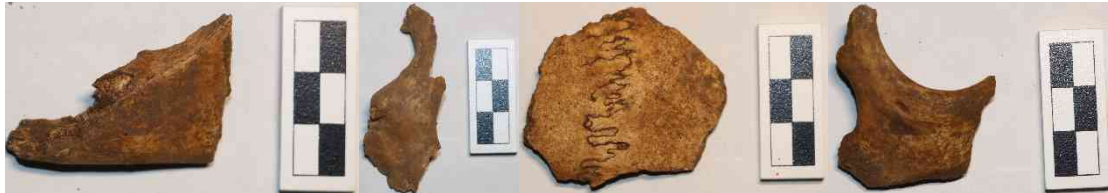


Figure 18 – Cranial Bones

Table 25 – Skull Bones (TC-13)

BONE	SIDE	COMP	PATH	CNT	COMMENTS
MAN	Left	4	NO	1	Bone in poor condition with only fragment of left body remaining and one tooth socket (6621). Does not go with 6620.
MAX	Right	4	NO	1	Bone in poor condition. Consists of two fragments: one of part of the border of the nasal aperture with small section of the sinus cavity (6614) and the other part of the alveolar 6626 (no teeth).
OCC	L&R	4	NO	1	Bone in poor condition. Small fragment but will large muscle marking (possible male?). No photograph.
PAR	L&R	4	NO	2	Bones in poor condition. Section of the left and right parietal with fused 81agittal suture. No separate entry of the left and right sides (CNT 2). 6653
PAR	SND	4	NO	0	Bone in poor condition (6654-6656) 2 fragments. Possibly goes with 6653. No CNT
SPH	SND	4	NO	1	Bone in poor condition. Basin area with foramen ovale and rotundum only.
TEM	Left	4	NO	1	Bone in poor condition. Part of external auditory meatus only.
ZYG	Right	1	NO	1	Bone is complete and in good condition. 6613

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; MAN=Mandible; MAX=Maxilla; OCC=Occipital; PAR=Parietal; SPH=Sphenoid; TEM=Temporal; ZYG=Zygomatic; SND=Side Not Determined **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%



Figure 19

Table 26 – Long Bones and Clavicle (TC-13)

BONE	SIDE	COMP	PATH	CNT	COMM
ULN	Right	3	NO	1	Bone in poor condition missing the proximal epiphysis and the distal 1/3 of the bone PM. 6612
FIB	SND	3	NO	1	Bone in poor condition – midshaft fragment only. 6652 does not go with other FIB fragment.
FIB	SND	4	NO	1	Bone in poor condition – fragment toward proximal end. 6652 does not go with other FIB fragment.
TIB	Left	4	NO	1	Bone in poor condition missing all except for the distal end. Does not go with 6652.
TIB	SND	4	NO	1	Bone in poor condition with only a small shaft fragment remaining (6652). Does not go with 6611.
CLA	Left	2	NO	1	Bone in fair condition missing the lateral 1/3 of the bone PM. Sternal end fused >25yrs of age.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; ULN=Ulna; FIB=Fibula; TIB=Tibia; CLA=Clavicle; SND=Side Not Determined **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

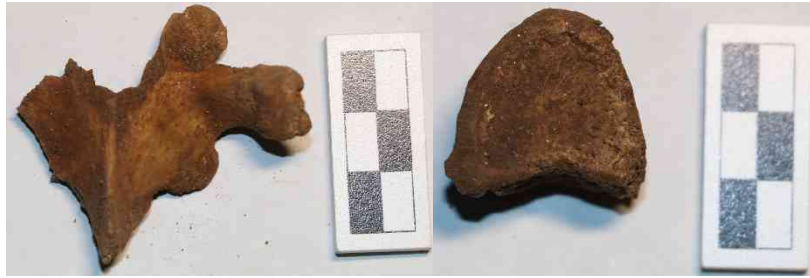


Figure 20 – Thoracic Vertebra

Table 27 – Vertebra/Ribs/Sternum (TC-13)

BONE	SIDE	COMP	PATH	CNT	COMMENTS
THR 3-9	NA	3	NO	1	Bone in fair condition missing the left and right arches PM. 6639
THR 3-9	NA	3	NO	1	Bone in poor condition missing the 50% of the left and 25% of the right arches PM. 6643. Does not go with 6639.
R2-12	Left	3	NO	2	Bones in poor condition. Fragments of the shaft.
R2-12	Right	3	NO	1	Bone in poor condition. Fragment of the shaft.
STE-BOD	NA	4	NO	1	Bone in poor condition. Fragment of body with 2 articular surfaces.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; THR=Thoracic; R=Rib; STE-BOD=Sternal Body; NA=Not Applicable

**Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%



Figure 21 – Hand and Foot Bones

Table 28 – Hand and Foot Bones (TC-13)

BONE	SIDE	COMP	PATH	CNT	COMMENTS
MC5	Right	3	NO	1	Bone in poor condition missing the proximal epiphysis and 1/2 of the distal epiphysis PM.
MT2	Right	2	NO	1	Bone in fair condition missing the distal epiphysis PM. 6650-6651
SAC	Right	1	NO	1	Bone complete in good condition. 6648.
PHP-ND	Left	1	NO	1	Bone in good condition missing small fragment from distal end (#2-4). Does not affect measurement 43.38. (6646) might go with other PHP in 6646.
PHP-ND	SND	4	NO	1	Bone in poor condition missing all except for the proximal epiphysis. 6624 Not 1 or 5.
PHP-ND	Right	1	NO	1	Bone complete in good condition (41.56) (6646) might go with other PHP in 6646.
PHI-ND	SND	1	NO	1	Bone complete in good condition 34.11 (6647) might go with 6646. #3-4
PHI-ND	Right	1	NO	1	Bone complete in good condition 28.18 (6617) might go with 6646;6647. #3-4
PFP-ND	Right	1	NO	1	Bone complete and in good condition. 29.13. (6616) Might go with other phalanges from TP3.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; MC=Metacarpal; MT=Metatarsal; SAC=Scaphoid; PHP=Phalange Hand Proximal; PHI=Phalange Hand Intermediate; PFP=Phalange Foot Proximal; SND=Side Not Determined **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%



Figure 22

Table 29 – Dentition (TC-13)

T-Type	T#	SCR	PATH	CAR	CAL	ATT	OTH	PMD	CNT	COMMENTS
MO	NA	1	No	No	No	Yes	No	Yes	1	Tooth in poor condition missing 3/4 of crown and part of root. Not identifiable to specific upper molar but not 3rd. Minimal wear.
MO	1	1	Yes	Yes	Yes	Yes	No	No	1	Tooth complete in good condition. Carie on the occlusal surface. Calculus on lingual and distal surfaces. Minimal wear.
IN	9	1	Yes	Yes	No	Yes	Yes	No	1	Tooth complete and in good condition. Minimal wear. Cavity present on the mesial surface. Clear evidence for shoveling.
IN	23	1	Yes	Yes	Yes	Yes	No	No	1	Tooth complete in good condition. Angular attrition. Moderate wear. Cavity present on the distal surface. Calculus on distal and mesial below the CEJ.

**Key:** T-Type=Tooth Type; T#=Tooth Number; SCR=Score (eruption 1=Erupted in occlusion); PATH=Pathology; CAR=Caries; CAL=Calculus; ATT=Attrition; OTH=Other; PMD=Post-Mortem Damage; CNT=Count; MO=Molar; IN=Incisor

### TC-14 (TC-18-TP3-7)

#### Summary overview

These skeletal remains associated with TC-14 consist of right partial mandible (see Figure 23 and Table 30) of a non-child/non-adult (possible adolescent). Age determination was based on the overall size and the possible lack of eruption or partial eruption of T32. Sex determination and ancestry assessment were not attempted due to the fragmentary nature of the mandible. No pathology was observed.



Figure 23 – Right Mandible

Table 30 – Skull Bones (TC-14)

BONE	SIDE	COMP	PATH	CNT	COMMENTS
MAN	Right	4	NO	1	Bone in poor condition missing all except for the right gonial angle.6620

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; MAN=Mandible **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%



## **Trinity Church – Stage 2 Skeletal Material**

### **TC-15 (TC-19-P19-1)**

#### **Summary overview**

These remains consist two bones, cranial fragments from the occipital bone and the complete femur (see Figure 24 and Table 31) and of an infant between 6 months and 1 years old excavated from Pile 19 on June 26<sup>th</sup> 2019. Bones are in good to poor condition. Sex determination was not possible due to the young age of the individual. Age determination was based on overall size and the maximum length of the femur. Possible abnormal porosity present at the distal end on the medial border of the shaft of the femur.

The MNI for TC-15 is one. TC-15, originally mixed with the bones from TC-16, was separated based on age.



Figure 24 – Left Femur

Table 31 – Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
FEM	Left	1	?	1	Bone is complete and good condition.
OCC	SND	4	NO	1	Bone in poor condition broken post-mortem. Two fragments.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; FEM=Femur; OCC=Occipital; SND=Side Not Determined **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

### **TC-16 (TC-19-P19-2)**

#### **Summary overview**

These remains comprise 6 bones: the partial left and right femur, the mostly complete right tibia (see Figure 25), and vertebra sacral fragment, and a pubis fragment (see Table 32) excavated from Pile 19 on June 26<sup>th</sup> 2019. In addition to the six identifiable bones, three long bone fragments were also recovered. All material is from an adult over the age of 22 years of age based on fusion rates. Sex determination was not possible but based on the overall small size of the bones it is suggest that they are more likely from a female. No pathological conditions were observed. Maximum length measurements were not possible due to post-mortem damage and a lack of comparative material. The material from TC-16 was originally mixed with the infant from TC-15. The MNI for TC-16 is one.



Figure 25: Tibia (R), Femur (L&R)

Table 32 – Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
FEM	Left	2	NO	1	These remains consist of a partial left femur missing the proximal 1/3 of the bone post-mortem.
FEM	Right	4	NO	1	These remains consist of a partial right femur missing all but the distal epiphyses bone post-mortem.
TIB	Right	1	NO	1	These remains consist of the mostly complete right tibia. Small adult bone.
SAC-UI	NA	4	NO	1	These remains consist of the left articular surface only.
PUB	SND	4	NO	1	Bone is in poor condition represented by a small fragment.
THR-UI	NA	4	NO	1	Bone in poor condition missing all except for the superior surface of the body.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; FEM=Femur; TIB=Tibia; SAC=Sacrum; PUB=Pubis; THR=Thoracic; UI=Unidentified; SND=Side Not Determined **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

### TC-17 (TC-19-DT18-19-1)

#### Summary overview

These remains consist of a mostly complete tibia, the distal 1/2 of a femur and the complete ilium and ischium (see Figure 26 and Table 33) of a neonate approximately one month old excavated from Drainage Trench 18-19 on June 26<sup>th</sup> 2019. Age determination was based solely on the maximum length of the tibia. No comparative material was used. Sex determination was not possible. The remains were originally mixed with TC-18 from the same unit. No pathological conditions were identified. The MNI for TC-17 is one.



Figure 26 – Right Ilium; Right Ischium; Left Tibia; Left Femur

Table 33 – Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
FEM	Left	3	NO	1	Bone is in poor condition missing the proximal 1/2 post-mortem.
TIB	Left	1	NO	1	Bone is complete and in good condition. MxL suggest an age of approximately 1 month old.
ILI	Right	1	NO	1	The right ilium is complete and in good condition
ISCH	Right	1	NO	1	The right ischium is complete and in good condition

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; FEM=Femur; TIB=Tibia; ILI=Ilium; ISCH=Ischium **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

## TC-18 (TC-19-DT18-19-2)

### Summary overview

These remains consist of four bones from a child approximately 2 years of age in fair to poor condition. All that remains of this child are the partial remains of a femur, radius and the left and right tibia (see Figure 27 and table 34) excavated from Drainage Trench 18-19 on June 26<sup>th</sup> 2019. This material was originally mixed with TC-17 from the same unit. Age determination was based on the overall size of the bones compared to material in the lab. Sex determination was not possible. No pathology was observed. The MNI for TC-18 is one.



Figure 27 – Right radius; Left Tibia; Left Femur

Table 34 – Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
RAD	Right	3	NO	1	Bone is in poor condition missing the distal 2/3 of the bone post-mortem
FEM	Left	3	NO	1	Bone in poor condition missing the proximal 1/2 and the distal end.
TIB	Left	3	NO	1	Bone is in poor condition missing the distal 3/4 of the bone post-mortem.
TIB	Right	3	NO	1	Bone is in poor condition missing the proximal and distal ends of the bone.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; FEM=Femur; TIB=Tibia **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

## TC-19 (TC-19-P18-1)

### Summary overview

These remains consist of post-cranial bones (see Figure 28 and Table 35) of an adult of indeterminate sex excavated from Pile 18 on 6-26-2019. Bones are in good to poor condition with most suffering from some post-mortem damage. Age determination was based on the complete fusion of all bones present suggesting that this individual was an adult. Sex determination is based on the maximum diameter of the head of the femur. These remains were originally mixed with TC-20 a child/infant from the same unit. No pathological conditions were observed. Bones present include lumbar and sacral vertebra, long bones and pelvis fragments. The MNI for T-19 is one.



Figure 28 – Right Radius; Right Ulna; Right Humerus; Right Femur; Lumbar 5



Table 35 – Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
RAD	Right	1	NO	1	Bone is mostly complete and in good condition missing the distal epiphysis post-mortem.
ULN	Right	1	NO	1	Bone is mostly complete and in good condition missing the distal epiphysis post-mortem.
HUM	Right	3	NO	1	Bone is in poor condition missing the proximal 3/4 post-mortem
FEM	Right	2	NO	1	Bone in fair condition missing the distal 1/3 of the bone post-mortem. Indeterminate sex based MxD.
SAC	NA	4	NO	1	Fragment of the sacrum. Individual bone not identified.
LUM-1	NA	1	NO	1	Bone in complete and in good condition.
LUM-2	NA	1	NO	1	Bone in complete and in good condition missing the left superior articular facet.
LUM-3	NA	1	NO	1	Bone in complete and in good condition.
LUM-4	NA	1	NO	1	Bone in complete and in good condition.
LUM-5	NA	1	NO	1	Bone is complete and in good condition.
ISCH	Right	3	NO	1	Bone is in poor condition missing the IPR and most of the acetabular surface post-mortem.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; RAD=Radius; ULN=Ulna; HUM=Humerus; FEM=Femur; SAC=Sacrum; LUM=Lumbar; ISCH=Ischium **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

### TC-20 (TC-19-P18-2)

#### Summary overview

These remains consist of one ilium one long bone (see Figure 29) and seven ribs (see Table 36), in fair to poor condition from a young child excavated from Pile 18 on June 26<sup>th</sup> 2019. Age determination is based solely on photo comparison to laboratory material. Sex determination was not possible. These remains were originally mixed with TC-19 from the same unit. No pathology was observed. The MNI for T-20 is one.



Figure 29 – Left Ilium; Tibia SND

Table 36 – Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
ILI	Left	2	NO	1	Bone in fair condition missing the iliac crest region. No fusion.
TIB	SND	4	NO	1	Bone in poor condition missing the proximal and distal ends along with portions of the shaft.
R3-12	SND	4	NO	7	Fragments from 7 ribs.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; ILI=Ilium; TIB=Tibia; SND=Side Not Determined **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

## TC-21 (TC-19-TP2-EXT-1)

### Summary overview

These remains comprise seven post-cranial bones (see Figure 30 and Table 37) of a young adult between 20 and 25 years of age excavated from Test Pit 2-Extension at a depth of 7-8 feet BGS on June 5<sup>th</sup> and 6<sup>th</sup> 2019. The bones from TP2-EXT were in fair to poor condition with elements showing some post-mortem damage. Age determination was based on incomplete fusion of the tibia. Sex determination was not possible. No pathology was observed. The MNI for TC-21 is one.



Figure 30 – Right Tibia; Fibula SND; Left Femur; Left MT1; Left MT3

Table 37 – Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
FEM	Left	3	NO	1	Bone in poor condition missing the proximal 3/4 of the bone post-mortem.
TIB	Left	1	NO	1	Bone in good condition complete but broken into 3 pieces post-mortem. Fusion line still present.
FIB	SND	2	NO	1	Bone fair condition missing the proximal and distal ends.
MT1	Left	1	NO	1	Bone is complete and in good condition.
MT1	Right	4	NO	1	Bone in poor condition missing the distal ¾.
MT3	Left	2	NO	1	Bone in good condition missing the distal end post-mortem.
TAL	Left	1	NO	1	Bone is complete and in good condition.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; FEM=Femur; TIB=Tibia; FIB=Fibula; MT=Metatarsal; TAL=Talus; SND=Side Not Determined **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

## TC-22 (TC-19-TR1-1)

### Summary overview

These remains consist of the fragmented cranial and post-cranial remains (see Figure 31 and Table 38) of a young adult-adult individual of indeterminate sex excavated from TR1 on March 27<sup>th</sup> 2019. Bones were found to be in fair to poor condition with all material suffering from post-mortem damage. Sex determination was based solely on the gonial angle of the mandible which exhibited female type morphology. No pathology was observed. The MNI for T-22 is one.



Figure 31 – Left Ulna and Right Mandible

Table 38 – Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
MAN	Left	3	NO	1	Bone in poor condition missing the right 1/2 and anterior portions. Abscess associated with T20.
ULN	Left	1	NO	1	Bone is in fair condition. Complete but broken post-mortem.
RIB 2-12	Left	4	NO	5	Fragment of at least 5 ribs without ends.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; MAN=Mandible; ULN=Ulna **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

### TC-23 (TC-19-TP4N-1)

#### Summary overview

These remains consist of the partial mandible (see Figure 32 and Table 39) of an infant between nine months and one year of age excavated from TP4N on March 29<sup>th</sup> 2019. The mandible is in poor condition missing the entire left side and the bone post T70. Three teeth are in situ and have not erupted (see Table 40). Age determination was based on dental eruption patterns. Sex determination was not possible. These remains were originally mixed with T-24 from the same unit. No bone or dental pathology was observed. Dental pathology assessment was only possible for T67 and T69 and was only assessed for hypoplasia. The MNI for T-23 is one.



Figure 32 – Partial Mandible

Table 39 – Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
MAN	Right	3	NO	1	Bone in poor condition missing left side except mental eminence area. Also missing the bone post T70

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; MAN=Mandible; **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

Table 40 – Dentition

T#	SCR	PATH	CAR	CAL	HYP	ATT	OTH	PMD	CNT	COMMENTS
67	2	NO	NA	NA	NO	NA	NO	NO	1	Tooth is complete and in good condition but has not erupted from the crypt.
69	2	NO	NA	NA	NO	NA	NO	NO	1	Tooth is complete and in good condition but has not erupted from the crypt
70	2	NA	NA	NA	NA	NA	NA	NA	1	Tooth in crypt only small opening above the crown. Pathology not observable.

**Key:** T#=Tooth Number; SCR=Score (eruption 2=No eruption-in crypt); PATH=Pathology; CAR=Caries; CAL=Calculus; ATT=Attrition; OTH=Other; PMD=Post-Mortem Damage; CNT=Count; MO=Molar; IN=Incisor



## TC-24 (TC-19-TP4N-2)

### Summary overview

These remains consists six post-cranial bone fragments (see Figure 33 and Table 41) excavated from at least one non-child/adolescent excavated from TP4N on March 29<sup>th</sup> 2019. Age is based solely on fusion suggesting an age greater than 16 years old. Bones are in poor condition with all material suffering post-mortem damage. Sex determination was not possible. These bones were originally mixed with the infant remains from T-23. No pathology was observed. The MNI for T-24 is one.



Figure 33 – Right Radius; Cervical Vertebra; Left Ilium and Ischium

Table 41 – Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
RAD	Right	2	NO	1	Bone is mostly complete missing the proximal and distal ends post-mortem.
CER3-5	NA	2	NO	1	Bone in fair condition missing the left arch post-mortem.
RIB 2-12	SND	4	NO	2	Two rib bodies representing 2 ribs.
ILI	Left	4	NO	1	Bone in poor condition missing over 75% of the bone
ISCH	Left	3	NO	1	Bone in poor condition missing over 50% of the bone

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; RAD=Radius; CER=Cervical; ILI=Ilium; ISCH=Ischium; SND=Side Not Determined **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

## TC-25 (TC-19-TP6N-1)

### Summary overview

These remains consist of three bones post-cranial bones (see Figure 34 and Table 42) from a non-child/adolescent over the age of 16 years excavated from TP6N on March 29<sup>th</sup> 2019. Age determination was based on fusion rates for vertebra. Sex determination was not possible. No pathological conditions were observed. The MNI for TC-25 is one.



Figure 34 – Lumbar Vertebra 1

Table 42– Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
V-UI	SND	4	NO	1	Small vault bone fragment. No identification.
LUM-1	NA	1	NO	1	Bone is mostly complete missing the left superior articular facet post-mortem.
RIB 2-12	SND	4	NO	2	Two rib fragments in poor condition.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; V=Vault; LUM=Lumbar; UI=Unidentified; SND=Side Not Determined **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

### TC-26 (TC-19-TP8-1)

#### Summary overview

These remains consist two bones, the right maxilla and palatine (see Figure 35 and Table 43) from a child approximately 11 years old excavated from TP8 on April 2<sup>nd</sup> 2019 from a depth of 30 inches BGS. The maxilla retains three teeth (see Table 44) all of which are in situ with only one that is fully erupted. Age determination is based on dental eruption patterns. Sex determination was not possible. The maxilla exhibited pathological conditions in the form of an abscess associated with T4/5. In addition, T6 is impacted with the deciduous canine abnormally retained. The MNI for TC-26 is one.

Figure 35 – Maxilla with three teeth *in situ*

Table 43 – Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
MAX	Right	2	YES	1	Bone in fair condition missing the entire left side post-mortem. Abscess associated with T4/5.
PAL	Right	1	NO	1	Bone is mostly complete missing small fragment from the medial border.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; MAX=Maxilla; PAL=Palatine **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

Table 44 – Dentition

T#	SCR	PATH	CAR	CAL	HYP	ATT	OTH	PMD	CNT	COMMENTS
2	2	NA	NA	NA	NA	NA	NA	NA	1	Tooth is complete and still in crypt. Not observable for pathology assessment.
3	1	NO	NO	NO	NO	YES	NO	NO	1	Tooth is complete and in good condition. Minimal wear.
6	2	YES	NA	NA	NA	NA	YES	NA	1	Tooth is complete and still in crypt. Tooth impacted.

**Key:** T#=Tooth Number; SCR=Score (eruption 2=No eruption-in crypt); PATH=Pathology; CAR=Caries; CAL=Calculus; ATT=Attrition; OTH=Other; PMD=Post-Mortem Damage; CNT=Count; MO=Molar; IN=Incisor

## TC-27 (TC-19-TP3-1)

### Summary overview

These remains consist of a single central incisor and one rib (see Figure 36 and Tables 45-46) of an adult between the age of 24 and 30 excavated from TP3 on April 4<sup>th</sup> 2019. Age determination is based solely on the moderate dental wear found on the incisor. Sex determination was not possible. The tooth shows clear evidence for hypoplasia formation and pre-mortem chipping. No bone pathology. The MNI for TC-27 is one.



Figure 36 – Tooth 9; Rib 2-12

Table 45 – Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
RIB 2-12	Left	3	NO	1	Bone in poor condition missing the sternal 1/2 of the bone.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

Table 46 – Dentition

T#	SCR	PATH	CAR	CAL	HYP	ATT	OTH	PMD	CNT	COMMENTS
9	1	YES	NO	NO	YES	YES	YES	NO	1	Tooth is complete in good condition. Hypoplasia. Moderate wear. Chipping

**Key:** T#=Tooth Number; SCR=Score (eruption 2=No eruption-in crypt); PATH=Pathology; CAR=Caries; CAL=Calculus; ATT=Attrition; OTH=Other; PMD=Post-Mortem Damage; CNT=Count; MO=Molar; IN=Incisor

## TC-28 (TC-19-TP6S-1)

### Summary overview

These remains consist of a single isolated canine (see Figure 37 and Table 47) of a child approximately 9.9 years of age, excavated from TP6S on April 4<sup>th</sup> 2019. Age determination was based on the incomplete formation to the tooth root (approximately  $\frac{3}{4}$  complete). Sex determination was not possible. No dental pathology was observed. The MNI for TC-28 is one.



Figure 37 – Tooth 27



Table 47 – Dentition

T#	SCR	PATH	CAR	CAL	HYP	ATT	OTH	PMD	CNT	COMMENTS
27	2	NO	NA	NA	NO	NA	NO	NO	1	Tooth is complete in good condition. No eruption. Root ¾ complete.

**Key:** T#=Tooth Number; SCR=Score (eruption 2=No eruption-in crypt); PATH=Pathology; CAR=Caries; CAL=Calculus; ATT=Attrition; OTH=Other; PMD=Post-Mortem Damage; CNT=Count; MO=Molar; IN=Incisor

### TC-29 (TC-19-TR9-1)

#### Summary overview

These remains consist three bones, two vertebra and one rib (see Figure 38 and Table 48) from a non-child/adolescent excavated from TP9 on April 4<sup>th</sup> 2019. Age is based on the fusion of the vertebra and the overall size of the bones. Sex determination was not possible. No pathology was identified. The MNI for TC-29 is one.



Figure 38 – Thoracic Vertebra; Vertebra fragment; Rib fragment

### 48 – Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
THR 2-9	NA	3	NO	1	Bone in poor condition missing the body and the left and right pedicles
V-UI	NA	4	NO	1	Fragment of unidentified vertebra.
RIB2-12	SND	4	NO	1	Bone in poor condition. Body fragment only.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; THR=Thoracic; V-UNK=Vertebra Unidentified; SND=Side Not Determined

**Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

### TC-30 (TC-19-DTRN-1)

#### Summary overview

These remains consist of post-cranial bone fragments (see Figure 39 and Table 49) from a non-child/adolescent excavated from Drainage Trench North on September 9<sup>th</sup> 2019. All bones are in poor condition suffering from post-mortem damage. Age determination was based solely on the overall size of the bones. Sex determination was not possible. No pathology was observed. Mixed in with this material were fragments of pottery and animal bones. The MNI for TC-30 is one.



Figure 39 – MT; Fibula fragment

Table 49 – Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
MT-UI	SND	4	NO	1	Bone in poor condition missing most of the proximal and distal ends.
FIB	SND	4	NO	1	Bone in poor condition missing most of the prox and distal 1/2 of the shaft and the prox and distal ends.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; MT-UI=Metatarsal Unidentified; FIB=Fibula; SND=Side Not Determined

**Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

### TC-31 (TC-19-NSDTSS-1)

#### Summary overview

These remains comprised two phalanges (see Figure 40), one rib fragment (see Table 50) and four post-cranial bone fragments from a non-child/adolescent excavated from the North-South Drainage Trench Southside Entrance on September 26<sup>th</sup> 2019. Age determination was based on the overall size of the bones and their complete fusion. Sex determination was not possible. Bones are in fair condition with most suffering from post-mortem damage. No pathology was observed. The MNI for TC-31 is one.



Figure 40 – Foot and Hand Phalange

Table 50 – Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
PHI-UI	SND	1	NO	1	Bone is mostly complete and in good condition.
PFP-UI	SND	1	NO	1	Bone is complete and in good condition.
RIB 2-12	SND	4	NO	1	Bone in poor condition. Body fragment only.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; PHI=Phalange Hand Intermediate; PFP=Phalange Foot Proximal;

UI=Unidentified; SND=Side Not Determined **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

### TC-32 (TC-19-NSDB-1)

#### Summary overview

These remains consist of one rib fragment and one long bone fragment (see Figure 41 and Table 51) of a non-child/adolescent excavated from the North South Drain on Broadway on September 25<sup>th</sup> 2019. Age determination was based on the overall size of the bones. Sex determination was not possible. No pathology was observed. The MNI for TC-32 is one.



Figure 41 – Long Bone and Rib fragment

Table 51 – Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
LB-UI	SND	4	NO	1	Bone in poor condition with only fragment of the shaft remaining. Non-femur, tibia, humerus
RIB2-12	SND	4	NO	1	Bone in poor condition. Body fragment only.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; LB-UI=Long Bone Unidentified; SND=Side Not Determined **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

### TC-33 (TC-19-SSCDT-1)

#### Summary overview

These two ribs (see figure 42 and Table 52) belong to an infant probably less than one year old excavated from the Southside of Church Drainage Trench on August 29<sup>th</sup> 2019. Age determination was based on the overall size of the bones compared to individuals with similar size bones of a known age. Sex determination was not possible. These remains were originally mixed in with TC-34-36 which were comprised of adults and children. No pathological conditions were observed. The MNI for TC-33 is one.



Figure 42 – Fragmentary remains from SSCDT

Table 52 – Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
RIB 1	Right	1	NO	1	Bone is complete and in good condition.
RIB2-12	Left	2	NO	1	Bone is approximately 50% complete missing the sternal and vertebral ends.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

### TC-34 (TC-19-SSCDT-2)

#### Summary overview

These remains consist of three bones (Table 53) belonging to a child between the ages of 1 and 14 years excavated from the Southside of Church Drainage Trench on August 29<sup>th</sup> 2019. Age determination is based solely on the overall size of the bones. Sex determination was not possible. These remains were originally mixed in with TC-33, 35 and 36 which were comprised of adults and an infant. No pathological condition were observed.

Table 53 – Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
PAR	SND	4	NO	1	Bone in poor condition. This material consists of 2 fragments of a parietal.
SKL-UI	SND	4	NO	1	Vault bone fragment. Does not go with PAR.
LUM-UI	NA	3	NO	1	Bone in poor condition. Only the arches remain. Not lumbar 5.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; PAR=Parietal; SKL=Skull; LUM=Lumbar; UI=Unidentified; SND=Side Not Determined **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%



## TC-35 (TC-19-SSCDT-3)

### Summary overview

These remains, comprising nine cranial and post-cranial bones (see Table 54), are from an adult excavated from the South Terrace Drainage Trench between August 27<sup>th</sup> and August 29<sup>th</sup> 2019. Age determination is based on the complete fusion of bones and the degenerative (arthritic) changes seen at some of the joints. Sex determination was not possible. Pathological changes were observed affecting two bones. Thoracic vertebra 11 (see Figure 43), exhibited abnormal bone growth consistent with osteoarthritis affecting multiple joints. In addition, the acromioclavicular joint exhibited marginal lipping (see Figure 43) also consistent with osteoarthritis. This material was originally mixed with TC-33, 34 and 36. The MNI for TC-35 is one.



Figure 43 – Thoracic 11; Left Scapula

Table 54 – Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
SKL-UI	SND	4	NO	1	Unidentified vault bone fragment.
THR-11	NA	1	YES	1	Bone is mostly complete missing the right superior articular facet post-mortem. Lipping present at the anterior-lateral border of the superior surface of the body and at the L&R body rib facets.
LUM-1	NA	3	NO	1	Bone in poor condition missing entire body and left and right superior facets and inferior right facet.
SCA	Left	4	YES	1	Bone in poor condition missing all except for part of the acromion process. Lipping present at the articular surface for the clavicle.
RIB2-12	SND	4	NO	2	Bones are in poor condition missing all except for small section of the body.
MT2	Left	2	NO	1	Bone is mostly complete missing the distal end post-mortem.
MC4	Left	1	NO	1	Bone is complete and in good condition.
MC3	Left	2	NO	1	Bone is mostly complete missing part of the proximal end and all of the distal end post-mortem.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; SKL=Skull; THR=Thoracic; LUM=Lumbar; SCA=Scapula; MT=Metatarsal; MC=Metacarpal; UI=Unidentified; SND=Side Not Determined **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

## TC-36 (TC-19-SSCDT-4)

### Summary overview

These remains consist of a lumbar vertebra (see Figure 44 and Table 55) of a non-child/adolescent excavated from the Southside of Church Drainage Trench on September 3<sup>rd</sup> 2019. Age determination is based on the overall size of the bone. Sex determination was not possible. No pathology was observed. This material was originally mixed with TC-33-35. The MNI for TC-36 is one.



Figure 44 - Lumbar Vertebra 1

Table 55 - Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
LUM-1	NA	1	NO	1	Bone is complete but broken postmortem.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; LUM=Lumbar; **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

### TC-37 (TC-19-SSCDTEE-1)

#### Summary overview

These remains consist of a single rib (see Figure 45 and Table 57) fragment from a child excavated from the Southside of Church Drainage Trench East End on August 28<sup>th</sup> 2019. Age determination is based solely on the overall size of the bone. Sex determination was not possible. No pathological conditions were observed. This material was originally mixed with adult material from TC-38. The MNI for TC-37 is one.



Figure 45 - Rib Fragment

Table 56 - Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
RIB2-12	Left	4	NO	1	Bone in poor condition missing the most of the sternal end and all of the vertebral end.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; LUM=Lumbar; **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

### TC-38 (TC-19-SSCDTEE-2)

#### Summary overview

These remains consist of cranial and post-cranial bones (see Figure 47 and Table 57) of an adult excavated from the Southside of Church Drainage Trench East End on August 28<sup>th</sup> 2019. Age determination was based on the complete fusion and the overall size of the bones. Sex determination was not possible. Pathological changes in the form of abnormal porosity were observed on the manubrium at the articular surface for the clavicles. These bones were originally mixed with the child from TC-37. The MNI for TC-38 is one.



Figure 48 – Thoracic Vertebra 12; Thoracic Vertebra; Manubrium; Left Zygomatic; Proximal Foot Phalange 1

Table 57 – Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
MAN	Left	4	NO	1	Bone is in poor condition missing all except for the left condyle.
ZYG	Left	1	NO	1	Bone is mostly complete missing some fragments from the inferior border.
MANU	NA	1	YES	1	Manubrium is in good condition. Some porosity at the articular surfaces for the left and right clavicles.
THR12	NA	1	NO	1	Bone is complete and in good condition.
THR2-9	NA	3	NO	1	Bone in poor condition missing the entire body and left and right pedicles.
LUM1-3	NA	4	NO	1	Bone in poor condition missing the right arch and entire body.
MC5	Left	2	NO	1	Bone is mostly complete missing the distal end post-mortem.
PHP2	Left	1	NO	1	Bone is complete and in good condition.
PFP1	Right	1	NO	1	Bone is complete and in good condition.

**Key:** COMP=Completeness; PATH=Pathology; CNT=Count; MAN=Mandible; ZYG=Zygomatic; MANU=Manubrium; THR=Thoracic; LUM=Lumbar; MC=Metacarpal; PHP=Phalange Hand Proximal; PFP=Phalange Foot Proximal **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%



APPENDIX B.  
STAGE 1 TP LB-1 SOIL BORING LOG (LANGAN in SCIAME 2018b)

Project Trinity Church Renovation				Project No. 170455301				
Location 75 Broadway				Elevation and Datum 37 (NAVD88)				
Drilling Company Warren George, Inc.				Date Started 9/11/18		Date Finished 9/12/18		
Drilling Equipment Portable Electric Rig				Completion Depth 42 ft		Rock Depth		
Size and Type of Bit 2-7/8in Tricone Roller Bit				Number of Samples 9		Undisturbed Core		
Casing Diameter (in) 3			Casing Depth (ft) 15		Water Level (ft.) First 25		Completion See Well Log	
Casing Hammer Safety		Weight (lbs) 140lbs		Drop (in) 30in		Drilling Foreman Clinton (Gil) Burgess		
Sampler 2-inch-diameter split spoon				Field Engineer Mary Lynn Williams				
Sampler Hammer Safety		Weight (lbs) 140lbs		Drop (in) 30in				

\\LANGAN.COM\DATA\DATA3\170455301\ENGINEERING DATA\GEOTECHNICAL\GINT\GSS\170455301 ENTERPRISE.GPJ - 10/5/2018 10:41:51 PM - Report Log - LANGAN

Note: as stated in the text, prior to drilling, excavations below 3.5 ft BGS, first using a post hole digger and then a hand auger, were carried out by the drillers to 8.5 ft. BGS before drilling the soil boring.. Both were undertaken with archaeological oversight.

Project		Project No.							
Trinity Church Renovation		170455301							
Location		Elevation and Datum							
75 Broadway		37 (NAVD88)							
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist. BL/ft	N-Value (Blows/ft)	
	+17.0	Brown medium SAND, trace gravel, trace silt (moist)[SP] <b>BC: CLASS 3B</b>	20				12		S-5 at 20ft
			21	S-5	SS	8	12	24	
			22				12		
			23				15		
			24						
			25				13		Drill to 25.0ft. Add more drilling mud. S-6 at 25ft
		Brown fine silty SAND (wet)[SM] <b>BC: CLASS 3B</b>	26	S-6	SS	16	10	19	
			27				9		
			28				11		
			29						
		Brown fine silty SAND, trace mica (wet)[SM] <b>BC: CLASS 3B</b>	30				8		Drill to 30.0ft. S-7 at 30ft
			31	S-7	SS	16	11	21	
			32				10		
			33				9		
			34						Drill to 35.0ft. Loss of Water
	+2.0	Brown fine silty SAND, trace mica (wet)[SM] <b>BC: CLASS 3A</b>	35				13		S-8 at 35ft
			36	S-8	SS	17	14	32	
			37				18		
			38						Drill to 40.0ft. Loss of Water
			39						
	-3.5	Brown fine silty SAND, trace mica (wet)[SM] <b>BC: CLASS 3B</b>	40	S-9A			11		S-9 at 40ft
			41	S-9B	SS	24	15	30	
		Brownish gray SILT, fine sand lenses (wet)[ML] <b>BC: CLASS 5B</b>	42	S-9C			15		
	-5.0		43				9		
			44						
			45						Bottom of boring at 9/12/2018 2:45 PM Observation well installed.

\\LANGAN.COM\DATA\NY\DATA\3170455301\ENGINEERING\DATA\GEO\TECHNICAL\GINT\LOGS\170455301 ENTERPRISE GPJ \_ 10/5/2018 10:41:51 PM \_ Report Log - LANGAN



APPENDIX C  
IDENTIFICATION OF BRICK AND MORTAR FRAGMENTS FROM TP 2  
E-mails between Allan Gilbert and Joan Geismar (Selected)

TRINITY PHASE 1, STAGE 2 ARCHAEOLOGICAL OVERSIGHT  
**Re Brick Fragment from TP2**  
**June and August 2019**

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Joan Geismar to Allan Gilbert

On Fri, Jun 7, 2019 at 11:49 PM Joan Geismar <[joan.geismar@gmail.com](mailto:joan.geismar@gmail.com)> wrote:  
Thanks so much, Allan. My phone was out of commission hence my late reply.

The pre-1827 date I mentioned is because a ban on burials was in effect below Canal St. by then so I'm assuming no burial vaults would have been constructed after that year in the Trinity Church burial ground where the brick fragment was retrieved from fill. On the other hand, the wall exposed along one side of the test pit in question may not be a burial vault at all but a later feature.

Unfortunately, I never saw the "wall" as it was obscured by lagging and the brick fragment in question was merely a fill component lacking any modern elements (no tell-tale styrofoam or plastic that has been the case elsewhere on site).

The cemetery has all sorts of drainage features constructed over time, some with brick elements and the brick fragment merely may be a fill component associated with one of these later features rather than a burial vault (so hard to tell with limited excavation by others—I was merely screening the excavated soil). It just would have been revealing if the mortar had suggested an association with construction of one of the burial vaults known to exist in the area of discovery. The mortar seems to negate a fill associated with a pre-1827 feature, so thanks for putting it in perspective.

Many thanks again,  
Joan

Sent from my iPhone

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Joan Geismar to Allan Gilbert

On Fri, Jun 7, 2019 at 2:58 PM Joan Geismar <[joan.geismar@gmail.com](mailto:joan.geismar@gmail.com)> wrote:

Hi Allan,

Four views of the brick in question. I believe the ground formed the bottom and the temper seems somewhat questionable. The trace of mortar is of interest to me, but I, of course, don't know exactly what I am seeing. As I mentioned, the question is, might this be a brick manufactured/used prior to 1827 or thereabout?

Please let me know if you need any additional information, or if it would help to see the real thing. I'd happily send it to you (and you wouldn't need to return it!)

Again, many thanks and all best,  
Joan

Joan H. Geismar, Ph.D., LLC  
40 East 83 Street  
New York, NY 10028

212 734-6512 (p)  
212 650-1521 (f)  
[joanhgeismar.com](http://joanhgeismar.com)

Allan Gilbert to Joan Geismar

On Sat., June 8, 2019, Allan Gilbert wrote:

You're welcome, Joan. It's hard to place much weight on a stray find in fill. The brick itself looks older than the early 1800s, but the mortar looks later, as if the piece had later mortar adhering perhaps due to a repointing. Not sure you can derive much profundity from the item, since it could also have been old brick material from pre-Revolutionary time that was incorporated into some later construction that was then demolished, and the remaining fragment interred in the cemetery as fill. The object could have a long and complex, but perhaps not very meaningful, depositional history, but for your perspective, the mortar suggests a later 1800s final burial (though I'm estimating from a photo without direct observation). If the mortar is white and sandy, it suggests a late date, if it is white but not sandy, it could be earlier lime mortar and potentially from a significant colonial era building. The photo gives me the impression of the former.

Allan

Allan S. Gilbert, Ph.D.  
Professor of Anthropology  
Department of Sociology & Anthropology  
401 Dealy Hall  
Fordham University

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Allan Gilbert to Joan Geismar

On Tues., July 23, 2019, Allan Gilbert wrote:

Hi Joan. I opened your box to look at the brick, but it was a bit wet. So I let it dry for a few days, but then I didn't get back to the office for a while. Today I'm here and see that the object could be colonial in its entirety.

**The brick fabric surely looks pre-Revolutionary** (emphasis added). It has very uneven temper particle sizes and is poorly mixed, suggesting a soak pit with a horse mixing the paste and not an industrial pug mill producing a uniform blending. The 2 dimensions we can measure are right for the period: 2 inches height is typical, 3.75 inches is a little shy of the typical 4 inches for the width. Length is not measurable. The upper surface of the brick is "washed," meaning that when it was on the brickyard drying, it rained, and the rain drops pockmarked the upper surface making a roughened upper face. Later bricks can be washed as well, so that's not a sufficient criterion for its age.

The mortar looks like a lime base. It's very white now that it's dry. Very white mortars are essentially lime with no extender, meaning it was the more expensive material to use. When extended with clay, colonial mortars took on a light brownish color, but the mix went a lot farther for the same cost (called lime-enhanced mud mortar when lime was added to an essentially clay material to stiffen it). So I'd guess that the brick fragment was initially part of a civic building where the cost could be borne by the administration. (I think the municipal structures in lower Manhattan had white mortars, if I remember correctly.) The colonial walls at Rose Hill were mud mortars with lime, but even the wealthy folks who came afterwards, the Wattses, used a clay extender, probably since they had to pay for it personally.

Best I can say. Do you want the object back?

Allan

Allan S. Gilbert, Ph.D.  
Professor of Anthropology  
Department of Sociology & Anthropology  
401 Dealy Hall  
Fordham University



APPENDIX D  
BETA ANALYTIC: WHELK SHELL C-14 DATING



**Beta Analytic**  
TESTING LABORATORY

**Beta Analytic Inc**  
4985 SW 74 Court  
Miami, Florida 33155  
Tel: 305-667-5167  
Fax: 305-663-0964  
[info@betalabservices.com](mailto:info@betalabservices.com)

ISO/IEC 17025:2005-Accredited Testing Laboratory

August 30, 2019

Joan Geismar  
Joan H. Geismar, Ph.D., LLC  
40 East 83 Street - 2E  
New York, NY 10028  
United States

RE: Radiocarbon Dating Results

Dear Joan Geismar,

Enclosed is the radiocarbon dating result for one sample recently sent to us. The report sheet contains the Conventional Radiocarbon Age (BP), the method used, material type, and applied pretreatments, any sample specific comments and, where applicable, the two-sigma calendar calibration range. The Conventional Radiocarbon age has been corrected for total isotopic fractionation effects (natural and laboratory induced).

All results (excluding some inappropriate material types) which fall within the range of available calibration data are calibrated to calendar years (cal BC/AD) and calibrated radiocarbon years (cal BP). Calibration was calculated using one of the databases associated with the 2013 INTCAL program (cited in the references on the bottom of the calibration graph page provided for each sample.) Multiple probability ranges may appear in some cases, due to short-term variations in the atmospheric  $^{14}\text{C}$  contents at certain time periods. Looking closely at the calibration graph provided and where the BP sigma limits intercept the calibration curve will help you understand this phenomenon.

Conventional Radiocarbon Ages and sigmas are rounded to the nearest 10 years per the conventions of the 1977 International Radiocarbon Conference and consistent with all past Beta Analytic radiocarbon dates. When counting statistics produce sigmas lower than  $\pm 30$  years, a conservative  $\pm 30$  BP is cited for the result. The reported  $\delta^{13}\text{C}$  was measured separately in an IRMS (isotope ratio mass spectrometer). It is NOT the AMS  $\delta^{13}\text{C}$  which would include fractionation effects from natural, chemistry and AMS induced sources.

All work on this sample was performed in our laboratories in Miami under strict chain of custody and quality control under ISO/IEC 17025:2005 Testing Accreditation PJLA #59423 accreditation protocols. Sample, modern and blanks were all analyzed in the same chemistry lines by professional technicians using identical reagents and counting parameters within our own particle accelerators. A quality assurance report is posted to your directory for each result.

Thank you for prepaying the analyses. As always, if you have any questions or would like to discuss the results, don't hesitate to contact us.

Sincerely,

Digital signature on file

Chris Patrick Director



## REPORT OF RADIOCARBON DATING ANALYSES

Joan Geismar

Report Date: August 30, 2019

Joan H. Geismar, Ph.D., LLC

Material Received: August 22, 2019

Laboratory Number	Sample Code Number	Conventional Radiocarbon Age (BP) or Percent Modern Carbon (pMC) & Stable Isotopes	
		Calendar Calibrated Results: 95.4 % Probability High Probability Density Range Method (HPD)	
Beta - 534940	TRINITY SAMPLE	1430 +/- 30 BP	IRMS $\delta^{13}\text{C}$ : -0.8 o/oo
			IRMS $\delta^{18}\text{O}$ : -2.6 o/oo
	(95.4%)	980 - 1260 cal AD	(970 - 690 cal BP)
	Submitter Material: Shell (Whelk)		
	Pretreatment: (shell) acid etch		
	Analyzed Material: Shell		
	Analysis Service: AMS-Standard delivery		
	Percent Modern Carbon: 83.69 +/- 0.31 pMC		
	Fraction Modern Carbon: 0.8369 +/- 0.0031		
	D14C: -163.07 +/- 3.13 o/oo		
	$\Delta^{14}\text{C}$ : -170.03 +/- 3.13 o/oo (1950:2019)		
	Measured Radiocarbon Age: (without d13C correction): 1040 +/- 30 BP		
	Calibration: BetaCal3.21: HPD method: MARINE13		
	DeltaR: 130 +/- 60		

Results are ISO/IEC-17025:2005 accredited. No sub-contracting or student labor was used in the analyses. All work was done at Beta in 4 in-house NEC accelerator mass spectrometers and 4 Thermo IRMSs. The "Conventional Radiocarbon Age" was calculated using the Libby half-life (5568 years), is corrected for total isotopic fraction and was used for calendar calibration where applicable. The Age is rounded to the nearest 10 years and is reported as radiocarbon years before present (BP), "present" = AD 1950. Results greater than the modern reference are reported as percent modern carbon (pMC). The modern reference standard was 95% the  $^{14}\text{C}$  signature of NIST SRM-4990C (oxalic acid). Quoted errors are 1 sigma counting statistics. Calculated sigmas less than 30 BP on the Conventional Radiocarbon Age are conservatively rounded up to 30.  $\delta^{13}\text{C}$  values are on the material itself (not the AMS  $\delta^{13}\text{C}$ ).  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$  values are relative to VPDB-1. References for calendar calibrations are cited at the bottom of calibration graph pages.



# Calibration of Radiocarbon Age to Calendar Years

(High Probability Density Range Method (HPD): MARINE13)

(Variables:  $\delta^{13}\text{C} = -0.8$  o/oo :  $\Delta\text{-R} = 130 \pm 60$  : Glob res = -200 to 500)

**Laboratory number**      **Beta-534940**

**Conventional radiocarbon age**      **1430  $\pm$  30 BP**

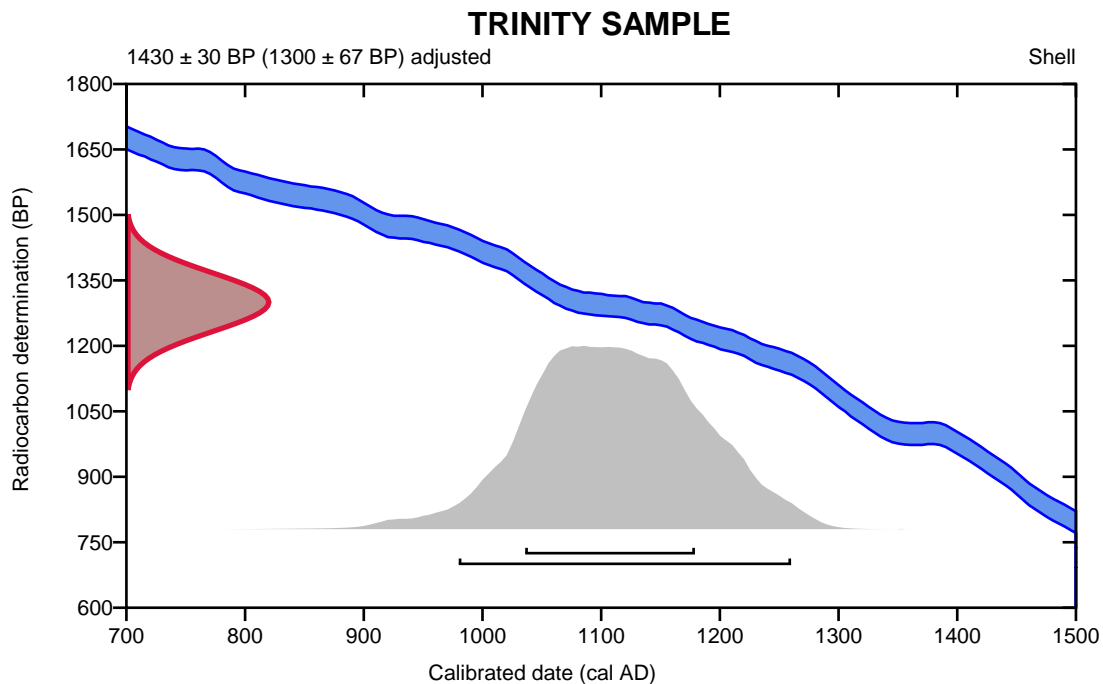
*1300  $\pm$  67 Adjusted for local reservoir correction*

95.4% probability

(95.4%)    980 - 1260 cal AD                      (970 - 690 cal BP)

68.2% probability

(68.2%)    1036 - 1179 cal AD                      (914 - 771 cal BP)



**Database used**  
**MARINE13**

## References

### References to Probability Method

Bronk Ramsey, C. (2009). Bayesian analysis of radiocarbon dates. Radiocarbon, 51(1), 337-360.

### References to Database MARINE13

Reimer, et.al., 2013, Radiocarbon 55(4).