The Reconstructed 1750/1761 Smithy at Historic Bethlehem

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From the Collections at Historic Bethlehem [PA]

The accurate reconstruction of Bethlehem's smithy was made possible because of the extensive records left by the Moravian founders and now housed in the Moravian Archives. Documents, including construction records and ledgers for the 1761 addition, indicate in detail building supplies, such as board feet of timber used for floors, window sashes, laths, stairs, and door frames. The modern researcher can learn how many bushels of lime were needed for bricking an outside stair, how many tile shingles were needed for the roof, and how many bricks were used to build the hearths for two chimneys, for example. We know how much individual workers were paid and how much it cost to feed them. We can infer that many different tradesmen worked together ---carpenters, nailsmiths, plasterers, masons, locksmiths, teamsters, tanners, blacksmiths, glaziers, to name a few -- to create this metalworking complex on the colonial frontier.

The 1750 smithy was constructed with an axis running roughly north-south along the slope overlooking the Monocacy Creek flood plain. The Single Brethren's Diary recorded on 9/20 November 1750 that "At noon, the carpenters, who have completed the stable in the farm and the new smithy which will be located next to the new pottery and will form a line with it, participated in a love feast." The limestone block walls of the new structure were thin (about 18") at grade, compared to the more massive walls of the pottery, waterworks and tannery. After seeing some of the foundation exposed during a 1977 archaeological excavation, it could be said that these walls were generally less well-made than the others. The only wall fragment exposed presented an appearance of roughly squared and field dressed stone. Like other masonry buildings in early Bethlehem, the structure likely was pointed with raised mortar with either a flat or ridged surface.

Interest in reconstructing this building, referred to in Moravian records as the "Blacksmith and Locksmith Shop", and "Nailsmith Shop" dates from the early 1990s. As heretofore noted, archaeological excavations were conducted at the site in 1997. Few artifacts were found and no portion of the 1761 addition's foundation was excavated because it is located under the parking lot of the Radisson Hotel Bethlehem. The west wall of the 1750 forge was found more than seven feet below the present grade, while the eastern wall was found only at 1-1½ feet below the current surface of the site (the present or current surface here means the former Zinzendorf Platz). Indeed, the Garrison-Oerter print of Bethlehem dated 1784 confirms the presence of a slope. The

1977 excavation report indicates that considerable fill, or grade modification, took place in the late 18"' century and again in the 20th century.

According to all sources consulted, the original smithy and its addition were shingled in red clay tiles. An entry in the Diacony Account Book for September 16, 1762, calls for "Tile shingles for 2700 for covering the roof "(of the addition). Two watercolors of Bethlehem, one dated 1784 and the other in 1812, confirm that the entire building was tile-covered until the early 19th century. This pictorial and archival evidence is further substantiated by the recovery of numerous clay tile fragments during the 1977 excavations.

According to very early 20th century photographs, period drawings and comparisons with existing period buildings, the roof pitch of the smithy was likely around 40 degrees. Most German builders in America continued to construct the steeply pitched roofs of their homeland until the early 1770s. The tannery has a roof pitch of about 40 degrees and the waterworks has a 45 degree pitch to its roof. The flared, or kicked, eaves with an accompanying plaster cornice were also part of the construction of the original smithy.

Many of the physical aspects of the 1750-1761 Smithy, such as window and door placement, have been revealed through research utilizing various prints and photographs of the building through time, including the 1784 Garrison-Oerter print and a 1793 watercolor by Samuel Reinke. Unfortunately all of the earliest views of the building are from the west and generally show the second story: foliage, sheds and other buildings to the west obscure most of the first floor so no accurate count can be made of windows and doors. The number of doors and windows in the reconstruction was determined by comparing it with other similar buildings still standing and finding references to items such as "cash for a Stock lock to ye back Door" in Diacony accounts.

For the interpretation of the building's interior we are fortunate to have a copy of the 1766 map of Bethlehem which provides a rough first-floor layout of each of the community's buildings. This floor plan, combined with information obtained from the 1977 excavation report, numerous shop inventories and building specifications, allowed our reconstruction architects to develop a reasonably accurate picture of at least the first floor interior of the building and, to a much lesser degree, the second floor.

According to the 1758 "Specifications of All Our Buildings," the 1750 smithy (housing only the blacksmith and locksmith) consisted of "one small room in which is the workshop." In 1766, a report entitled "Buildings in Bethlehem," indicated that the "house for the smith and locksmith" measured 46' x 25,' had two stories and contained "2 workshops, 2 rooms, 2 small chambers, and 2 other rooms." It is interesting to note that, despite the addition of the 1761 addition housing the nailsmith, the early Moravian authors described the two shops as if they were actually in separate buildings. Unfortunately, the 1766 description of the nailsmith details only the dimensions of the building: 25' x36.' The entire smithy after 1763 measured 82' x25,' was one room deep

with a total of four rooms on the first floor and at least eight second floor and attic level rooms. We know from other sources that in 1752 the tinsmith shop had been added on the attic level over the locksmith and that in the 1761 addition, the second floor space was allotted to the gunsmith and gunstock-maker.

The 1766 description corroborates nicely with the 1766 map of Bethlehem, which shows the first floor of the 1750 section as having two nearly equal size rooms; presumably the workshops (the current reconstructed plan). The addition is shown as having but one room and what appears to be a hall with a staircase. The 1750 portion of the structure, housing the workshops of the blacksmith and locksmith, was divided by a wall that created two rooms: one approximately 16'x 24,' the other 28' x 24' with what appears to be forge hearths placed back to back centered on the dividing wall.

These two hearths shared a common chimney. Opposite the wall in the larger room (north half) is an open hearth about 10' across. The existence of the open hearth was confirmed by the 1977 excavation report. No door openings are visible on the map. There are indications of a stairway leading to the second floor spaces on the south side of the building. There are no plans to reconstruct this stairway, as we are not allowed by current labor and industry regulations to allow occupancy of the second floor at this time.

Little information regarding the flooring on the first level exists. Traditionally, blacksmith shops had earthen floors, but the number of tiles ordered for the floor of the completed 1750-1761 building indicates that the floor was tiled which was done in the reconstruction.

After blacksmithing ended in the 1820s, the smithy was converted to residential uses. The building was "Victorianized" in the late 1800s and in the 1930s or 1940s was demolished.

Here are some pertinent facts about the smithy reconstruction:

- Funds for this project were provided through the "Window on Main Street" capital campaign launched in 1997 by Historic Bethlehem Inc., a member of the Historic Bethlehem Partnership; this project also included the design and installation of History Works!, the reconfiguration of the Colonial Industrial Quarter hillside to be more in keeping with its eighteenth-century appearance, adding handicapped-accessible paths to the Colonial Industrial Quarter, and creating Founder's Park to honor the original 13 Moravians who founded Bethlehem in 1741; the reconstruction of the smithy was started in September, 2001
- David Parker Architects, of Connecticut and Bethlehem, was the firm hired to research, design, and implement the reconstruction
- R.J. Doerr Company of Easton was the construction firm
- Kenneth Schwarz, master blacksmith at Colonial Williamsburg's Anderson Blacksmith Shop, provided valuable comparative analysis of other smithies and blacksmithing techniques

- Kyle Datesman, Burnside Plantation site coordinator, made the three bellows
- The limestone came from a Lower Nazareth Township barn that was being dismantled
- The red tiles for the roof were custom-fabricated by a company in Boston, based on period tiles found in Bethlehem
- The red tiles for the floor were custom-sized, hand-molded tiles, made by Glen Gery to match period brick tiles in Bethlehem
- The bricks were custom-sized and hand-molded by Redland Brick Co in their Cushwa Plant
- The wood used for the windows and door frames is white oak
- The forges were modeled after nineteenth-century German forges found in period lithographs
- The window and door frames are made with mortise and tenon joints
- The plaster cove cornice is a period construction technique found in other period buildings in Bethlehem
- The windows are constructed in the typical 6 over 6 pattern
- The herringbone pattern on the doors is typical of early Moravian construction
- The reconstructed smithy is built to the dimensions of the 1750 smithy; it is a building that does not run parallel to Main Street-rather the smithy and the 1749 pottery, its neighbor to the south, were part of an oil-axis alignment that connected the residential area on the top of the hill on a diagonal to the Colonial Industrial Quarter
- The four-foot wide door in the east wall of the blacksmith shop is wide enough to allow a horse to enter the work area; probably much of the horseshoeing work took place outside in the yard area, however
- A cistern was found during the excavations for the reconstruction; its location is such that it shares a wall with the foundation wall of the smithy. This cistern will be restored with a pump in the near future (it is interesting to note that this cistern was not found in the 1977 archaeological excavation)
- The workbench in the locksmith shop is positioned in front of the west window to afford the artisan the best possible natural light to accomplish fine tasks; in the blacksmith shop the area around the forge has no window and is darker to allow the smith to gauge more accurately the temperature of the iron in the forge
- The east facade of the structure features a raised ribbon pattern on the mortar, which can be found in the historic buildings on Church Street, which have not been repointed; this pattern was used to make a rubble masonry wall look more dressed or more formal, such as the ashlar pattern used on the Burnside farmhouse
- The dedication of the 1750/61 Smithy took place on June 15, 2004 and the building was opened to the public with working blacksmiths on June 17, 2004.