

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form*. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions.



1. Name of Property

Historic name: Schubert-Graber Log-Post Shop

Other names/site number: N/A

Name of related multiple property listing: N/A

2. Location

Street & number: 6561 Powder Valley Road

City or town: Zionsville State: Pennsylvania County: Lehigh

Not For Publication: NA Vicinity: NA

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended,

I hereby certify that this nomination request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60.

In my opinion, the property does not meet the National Register Criteria. I recommend that this property be considered significant at the following level(s) of significance:

 national X statewide local Applicable National Register Criteria: A B X C X D

<p style="text-align: center;"><u>Andrew J. MacDonald</u></p> <hr/> <p>Signature of certifying official</p>	<p style="text-align: center;"><u>11/1/2018</u></p> <hr/> <p>Date</p>
<p><u>Deputy SHPO/Pennsylvania Historical & Museum Commission</u></p> <hr/> <p>Title/State or Federal agency/bureau or Tribal Government</p>	
<p>In my opinion, the property <u> </u> meets <u> </u> does not meet the National Register criteria.</p> <hr/> <p>Signature of commenting official:</p>	
<p style="text-align: right;">Date</p> <hr/> <p>Title/State or Federal agency/bureau or Tribal Government</p>	

4. National Park Service Certification

I hereby certify that this property is:

- entered in the National Register
- determined eligible for the National Register
- determined not eligible for the National Register
- removed from the National Register
- other (explain: _____)

FW Janet A. Sartin
Signature of the Keeper

12/21/18
Date of Action

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5. Classification

Ownership of Property

Private:

Public – Local

Public – State

Public – Federal

Category of Property

Building(s)

District

Site

Structure

Object

Number of Resources within Property

Contributing	Noncontributing	
<u>1</u>	<u>0</u>	buildings
<u>0</u>	<u>0</u>	sites
<u>0</u>	<u>0</u>	structures
<u>0</u>	<u>0</u>	objects
<u>1</u>	<u>0</u>	Total

Number of contributing resources previously listed in the National Register: 0

6. Function or Use

Historic Functions

AGRICULTURE/ processing and storage

INDUSTRY/ manufacturing (cooperage)

DOMESTIC/ secondary structure (garage, storage)

Current Functions

Work in Progress

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7. Description

Architectural Classification: Other

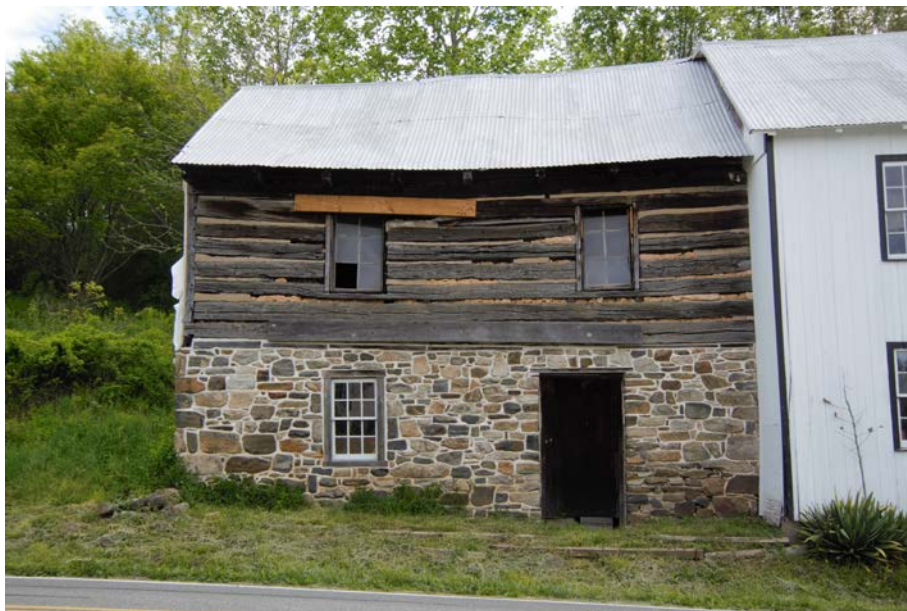
Materials: Principal exterior materials of the property:

Walls (visible): Wood/ Log, timber framing and board siding

Foundation (visible): Limestone, sandstone, concrete poured-in-place garage footers and bank walls

Roof: Sheet metal roofing

Narrative Description



Summary

The c.1795-1820 Schubert-Graber Log-Post Shop with its c.1936 garage addition is located at 6561 Powder Valley Road near the village of Zionsville in southern Lehigh County. The 2.5 story gable-roofed building is only a few feet from and situated parallel to Powder Valley Road, on the northeast side of the road. The shop portion of the building is exposed stone and log construction; the logs have tenons at the ends that fit into mortised corner posts (log-post construction). The c.1936 frame garage addition is on the south end of the shop, and extends slightly beyond the shop's west wall. The addition is sided in vertical wood boards. The building was formerly part of a farm, which has now been largely developed for single-family homes. (The farmhouse remains, on the opposite side of the road, and is flanked by new houses. The barn and most outbuildings have been razed.) The building is banked into a moderately-sloped hill allowing vehicle and pedestrian access from both the first and second levels of the building. The shop portion has been modified slightly over the years, and is believed to be partly constructed over the site of an even earlier building, with some (or most) of the original fabric being re-used for the c.1795-1820 building. The building retains the integrity necessary to convey its evolution and its important construction merits. It is believed the building originated as the cooperage for Melchior Schubert, who moved to this property with his family in 1791.

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Current aerial view showing location of the Shop (red pin), and recent development of former farmland.



1974 Aerial view of the farmstead; shop building is upper-left (indicated by arrow). The farmhouse across the road is the only other building to remain of the former farm.

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Current views of the Shop, from Powder Valley Road, facing SE (above) and NW (below). The shop portion of the building is c.1795-1820, with remnants of a prior c.1770 building or structure; the frame garage addition is c.1936.



The Schubert-Graber log-post shop reflects three periods of construction. The “first period” building, believed to be the first building or structure in this location, roughly dated between 1765 and 1775 and was largely demolished or rebuilt, leaving behind roughly forty-six percent of its first floor stone walls and many cross-cornered logs that were reused when the building was apparently rebuilt c.1795. This second period, c.1795, consists of the salvaged first period wall logs, which were reused in the corner-posted log structure that now stands on the site, positioned in part on the remnants of the first period stone walls. Physical evidence suggests that the portions of the first building (c.1770) reused in the second period building date at least 20 years prior to the existing building (c.1795). The second period consists of the current two story stone and corner-posted log shop that was placed directly on portions of the original

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stone walls and incorporated salvaged logs for the second story. The third period consists of the two story frame garage addition built against the south elevation of the shop c.1936.



This 1974 aerial view shows the rear elevation of the shop (indicated by arrow), barn, and other outbuildings.

Much like a bank barn, the first period building was tucked into a hill. Its rear 30" thick stone masonry wall was built heavy to hold the earth against it in place. The first and second period first floor masonry walls of the shop are built of sandstone with mud and lime mortar. The salvaged portion of the first period stone walls form two-thirds of the east bank wall and the east half of the south gable wall. The rest of the stone walls and the initial log-post walls above represent the second period of construction dating from c.1795 +/- shortly after Melchior Schubert and family moved to the property. After the current second period shop was erected, it stood for a few years unfinished with no trims, stairs or plaster until roughly the second decade of the 19th century. The finish construction period for the shop building most likely dates between c.1811 - 1820 when improved nail technologies were available. The combined date range for the second period stone/log shop is roughly 1795 to c.1820 +/-.



The rear elevation from the hillside above the shop, showing the wagon access-area into the upper level. The wagon doors are currently covered by plywood.

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The existing second period shop measures approximately 18' by 25'. It has two full stories with a walk-up third floor loft tucked below the rafters. The shop's second floor was created with a new timber-framed structure in-filled with the recycled first period building horizontal logs. This particular type of log construction is categorized in unpublished research findings by the nomination's author as a Type IV: log-post construction wall assembly. (See Section 8 for an explanation of this and other types of corner-posted log buildings.) Log-post construction is a much less-common means of log building in America than the corner notched log crib. Typical log cabins, houses and barns in America used full or half-dovetails, saddle, square, flat, V-or diamond shaped notches. Both log building types exhibit unique ways to secure the corners of the building. However, corner-post constructions required an experienced and skilled master builder with more knowledge about timber framing than traditional log house builders who relied on the cross cornered method of construction.

The Schubert-Graber shop building, with its first floor stone walls and second floor log walls, remains remarkably intact. No substantial modifications to any portion of the building have been made. The condition of the existing building varies. The c.1936 garage addition needs minor repairs and painting. The older log section needs major log and roof restoration, and interior plaster, floor, window and door repairs. The original configuration of the log and stone walls, both containing reused materials from the earlier building on the current site, provides an opportunity for an in-depth study and potential improved understanding of how early shop/farm buildings grew and evolved. Additional study will shed light on traditional European construction practices that lingered in use in the Americas well into the late 19th centuries.

Setting

Above the Schubert-Graber shop the Powder Valley Road descends down a gently sloping hill which continues past the shop a few hundred yards. The shop is situated parallel to and only a few feet east of the road. There is about a two foot rise from the road surface to the first floor of the shop. At the bottom of a southerly sloping ridge, the shop is at the toe of the hill where the land changes to a gently rolling, almost flat parcel of land where the main farm complex and several fields to the south were located. Single-family homes now dot the Schubert-Graber farmland surrounding the shop and farmhouse. The farmland was converted to residential use in the 1990s. The shop and farmhouse are the only two buildings remaining from the former farmstead.

About 40 yards below the shop is the area where wagons (and later, cars, tractors and farm trucks) once turned off the road. To reach the second story shop, a short lane was dug into the toe of the hill. The excess earth from the lane excavation was used to level a turn-around plateau adjacent to the wagon doors. The lane runs from a low point about 30 yards south of the building gently rising up toward the north terminating directly behind the shop's second floor level. Wagons and carriages were driven to the rear northeast side of the upper log section. Cars or trucks were also able to gain access to the south lawn below the garage addition by turning off the main road just south of the garage, pulling up onto the lawn and backing into one of the two garage bays for storage when not in use.

The natural slope of the land to the east moderately rises a few feet further up to a cultivated field which is now overgrown and reverting to woodland. The hill behind the shop continued on to the south about 100 yards where it descended enough to provide a gentle grade for the ramp leading to the rear threshing bay floors of the former stone-end bank barn. The field and slopes around the buildings were clear of all vegetation except for grasses and crops as late as 1981 when the last of the aerial photos in possession of

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current or former farmhouse owners were taken of the property. Much of that land has changed in character due to residential construction or reversion to woodland.

Detailed Description of the Existing Building and Evidence of Changes



Stone walls in the shop's ground level: The left photo shows a portion of the first period wall, built into the bank, with the original, thicker portion jutting out past the added (second period) portion. The vertical seam in the right photo shows where the first and second period foundations meet. The end of the first period wall, the left half of the wall, is believed to have been the edge of a door opening.

Shop Description - first floor

Forty-six percent of the existing first floor stone walls, consisting of two-thirds of the rear, bank wall and half of the south gable stone wall, pre-date the current building, and were retained to form part of the current shop's first story. The first floor's stone north gable end and west front wall reflect the "second period" of construction when the existing shop was built. About 25% of the existing fully exposed front wall fronting onto the road was rebuilt and 100% repointed in 1993.¹ The front wall's current first floor window frame and sash set was replaced with an exact duplicate of the window unit. The original door frame was replaced with modern 2" x 6" set of temporary jambs and plywood door. The original door jamb remains in storage over the garage. The original jamb is in good condition and can be restored and returned to its original position. The original door is missing, and has not been replicated.

The exterior of the rear stone bank wall is completely obscured by the hillside. The southeast gable end stone work is completely under cover inside the first floor of the garage addition. The northwest gable end wall is partially hidden by the grade of the hill. There is evidence of a window in the first floor's northwest gable end near the front wall. The outline of the window can be observed from the interior.² However, the exterior outline of the window can be faintly seen in the exterior stone work. No dateable evidence exists concerning the north gable slider window. Whether the former window was original to the c.1795-1820 second period construction or was installed later only to be eventually in-filled cannot be determined. The window is definitely in the second period's c.1795 portion of the wall and not the earlier first period wall.

¹ The first floor stone foundation window was completely rebuilt and replaced by Richard Klase, who was locally recognized as an excellent stone mason from the area. He restored the front stone wall, made a new window and frame to match the original, and repointed the bank wall foundation in the early 1990s.

² The exterior outline of the window cannot be observed in a newsprint photo purportedly taken in 1976. The c.1976 photo was from the Carolyn Lagler photo collection. It was cut from a newspaper and no date or attribution was noted by Lagler in the scrap book.

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The outline (left photo) surrounds an area believed to be a former window. The vertically-oriented jamb stones flanking an existing window (right) were typical in well-laid stone masonry. This wall, facing the road, has been repointed.

The shop's first floor consists of a single room built entirely with exposed stone walls. There are a few original second period tongue-and-grooved, random-width, surface-nailed wood floor boards fastened to chestnut joists buried level with the earth. There were a series of eight chestnut sleepers fairly evenly spread over the full width of the room and trenched into the earth floor running from north to south the length of the room. Only three of the second period first floor joists remain. The joists, known as sleepers, were hewn only on the top side. Earth was tamped around the joists to keep the floor as warm as possible in the winter. The joists were laid in the earth with the flattened tops leveled across the room. The surviving joists are spaced roughly 3' apart. The flooring consists of regional heart pine, vertically sawn tongue-and-groove boards with hand-planed tops. The flooring was nailed to the joists with handmade nails. The boards are random widths ranging in size from 6" to 8-1/2" wide.

No material remnants or evidence remains to suggest a finished first floor ceiling. The second floor joists and the underside of the second floor's flooring are unfinished and exposed to the first floor. The remaining original joists have slightly chamfered lower edges. The interior walls were once covered with a lime entrained "rough cast" coating, the vast majority of which is now missing. Rough cast is a form of stucco that gives more protection against extreme hot and cold weather temperatures, was cheaper to produce than a lime-finished plaster wall, and brightened up the room's interior.³ Only a few small pieces of the rough cast remain on the interior walls just under the gable wall plates for the first floor.

There is no internal connection from the shop's first floor into the c.1936 garage addition. There is no evidence of interior stairs from the first floor to the second floor of the shop. No trims exist on the first floor and there is no evidence the first floor room ever had any trims.

³ Typical of rough cast, and why the coating was called "rough," was due to the uneven finish of the final product. Rough cast was less expensive than both stucco and plaster to make since it contained less lime. Rough cast was also much less refined in its finished appearance. Rough cast was often used to coat barn and stable stone foundation interiors as well as basement food storage and lower level kitchen rooms.

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The first floor stone walls clearly exhibit two periods of construction. The remaining two first-period sandstone walls are noticeably different from the rest of the perimeter walls that were built as part of the second period shop. The difference in masonry construction between the two periods of the stone walls indicates a substantial portion of the current rear east wall and about half of the southeast gable end wall date to the first period and were retained and incorporated into the second period shop building. There is no detail in the first period stone work to assist in defining the date of the first period walls beyond stating the walls date to the third quarter of the 18th century

The date for the first period stone walls actually was determined from the weathered interior surfaces of the second floor's reused logs.⁴ Some of the log faces on the interior have rough weathered surfaces that document at least a twenty year exposure to the weather. When the first period V notched log building was dismantled, both sides of the wall logs (interior and exterior) were still in good condition with the first period exterior faces slightly weathered from exposure. There is no evidence remaining to state conclusively the first period log building was white washed. As they were reused in the second period log shop, the salvaged logs from the first period building were apparently installed without regard for former placement. Some of the logs were incorporated into the second period walls of the current shop building with former interior faces facing out. Likewise, some log exterior faces were placed facing inside. Those with weathered surfaces facing the interior document an existence of the first period building of at least two decades and probably longer before the first period building was dismantled, enlarged and the logs reconfigured to fit into trench mortised vertical posts.

Stone Walls

The information provided by examination of the stone work is important to understanding the evolution of the building. The remaining portions of first period walls suggest that the earlier building on this site was approximately 54% of the existing second period building's size. The original dimensions of the smaller first period building were approximately 15' at the gables and 17'-7" along the eave walls.

The southern portion of the rear wall, which pre-dates the current shop building, is banked into the hill rising behind the shop. This first period bank wall is 17'-7" in length and 30" thick. The bank wall thickness is far heavier than normally encountered for a masonry wall. The first period bank wall was so well built it remains in a near vertically plumb condition. Added to the north end of the first period stone bank wall is an 18" thick, 8'-3" second period stone wall built to extend the bank wall for the current shop. The shorter north extension bank wall's stone work is not tied or knitted into the original first period stone wall. The newer masonry extension is only butted against the former end of the first period east stone wall. The newer portion of the bank wall extension is only 18" thick, which was far more typical of stone wall construction of both periods. Normally these bank walls, even for the larger barns, were only 18" or 21" to 24" thick.

The shop's southeast gable-end wall as it exists today consists of first period and second period stone work. The current building's 18' width is approximately evenly divided with the east half being the first period and the west half of the south wall consisting of newer second period stone work. There is a clear demarcation in the form of a vertical line easily observed where the two south wall sections join on the interior. In the first period construction there was a door located against the west end of the remaining first period wall. The door and jamb were removed and a new extension of the south wall using sandstone was built against the old wall end. In the mortar joint clearly visible between the first and second period south gable stone work, a series of wood grain impressions remain from when the wet mud mortar was

⁴ For more detail about the evidence supporting reuse of logs, see Section 8.

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pushed up against a first period wood door jamb. The rough masonry door opening was approximately 3'-4" wide. The south gable door was framed with a set of heavy wooden jambs, the net finished door width was 32". The rest of the door width was for the heavy structural oak jambs. The second period south gable wall extension added another 30" to the west half of the south wall beyond the first period rough masonry door opening. There would have been a short distance of masonry wall from the rough masonry jamb to the interior corner.

The reused first period stone walls exhibit good masonry workmanship in the use of tie rocks, rubble laying patterns, corner quoins and vertical closers at the window and door openings. While the second period work is adequate, it was not as carefully laid as the earlier masonry work. The corners and vertical ends of the first period stone walls still stand straight and were professionally built by master masons. The second period front wall construction was far less skillfully laid, indicating a mid-level journeyman may have raised the walls.

The mortars used to bed the stones in both of the masonry wall periods were laid with the typical clay mixed with a minimum of chunk lime. A high lime content mortar was used to point the joints between the stones after the walls were up. The lime pointing mortar protects the soft, vulnerable interior clay bed mortar. The exposed above-grade exterior wall faces are finish-pointed with a shallow, narrow "V" joint while the interior exhibits less expensive wide, flat-joint pointing.

During the construction of the second period first floor stone walls, the walls were raised so the four corners were higher than the rest of the walls. When the log structure was raised to create the second floor, the gable-end log sills were placed first and the eave-wall sill logs were locked over the gable sill corners with a combination of half dovetail and coggled joinery.⁵ After the sill logs were laid on the corners, the tops of the gable stone walls were completed with masonry laid up tight to the bottom of the gable sills. The eave wall sides are finished at the same level as the gable end walls. The space between the eave stone walls and the bottom of the eave wall sills are filled with chunks of oak wood cut from the salvaged logs.



Second floor view of the interior, showing the north-facing gable-end wall (left) and the former exterior Dutch door of the south-facing end wall, now covered by the interior of the garage addition (right). These Type 1 door posts are typical of every building with door openings in log walls.

⁵ A cog is a joint that locks one side of a joint to another such as where a joist passes over a top plate wall log.

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Shop Description - second floor

The shop's log-walled second floor is constructed of both new-to-the-second-period logs and recycled two side hewn logs salvaged from the prior first period building. The log walls are exposed on the east, north and west exterior sides. The south log wall is protected by the two story garage addition. All four log walls are plastered on the interior. There are two six-over-six double hung sash windows on the front elevation, roughly, but not exactly, aligned above the first floor's window and door. The upper sashes were fixed in place and the lower sashes were moveable. The upper and lower sashes were installed without parting beads and check rails. This type of sash is known as plain sash work. The panes of glass measure 8" x 10". There is one matching window on the north end. The original sashes are all missing and the replacement sashes were made in the 20th century. The garage addition covers the shop's only single doorway that originally opened onto the hillside next to the lane; the door is missing. The depth of the rebate in the door post indicates the original door was a plain style 1" thick board and batten door. There are two sets of door hinge pintels, one set placed over the other in the remaining original door jamb. The double sets of hinge pintels clearly indicate there was a Dutch style door with two leaves both hung with long strap hinges. The rear east wall contains a framed wagon doorway. Originally board and board doors would open out over the upper earth ramp level behind the shop. The entire opening measures 10'-6" wide. The opening was formed by framed, tenoned door posts. The original door posts are extant, but the original doors are missing. The east wagon doorway opening is currently filled with modern studs and plywood.

There are no stairs or a ladder that provide interior access between the second and first floors. There is a staircase to the loft located in the southwest corner of the shop room just west of the south gable Dutch door that originally lead to the exterior. The Dutch door now opens into the second floor of the garage addition. On the staircase wall that leads to the loft there is a large circle scribed into the boards. The circle was scribed into the stair wall using a pair of steel tipped compass points. The metal points of the compass were lodged in the ends of wooden handles. The scribe was used in making large circles for laying out wheels, barrel bottoms, lids and many other items; the presence of the circle supports the idea that the building was a shop for Melchior Schubert, a cooper.



Staircase connecting the second floor interior to the loft, with former exterior Dutch door opening to the left of the staircase.

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The shop's second floor was originally a single room interrupted only by the previously mentioned enclosed, vertically-boarded staircase to the loft. The ceiling is unfinished with exposed chamfered edge loft joists. The bottom side of the loft flooring is exposed to the second floor. The loft pine flooring was hand-planed on both the top and bottom sides and beaded only on the bottom side to provide a semi-finished appearance to the second floor ceiling. The shop walls are trimmed with beaded baseboards, chair rails, and casings around the openings. The staircase has two doorways. The doorway openings were never hung with doors. The entire staircase's woodwork was never painted. The interior surfaces of the log walls were white washed for a short period and later covered with split lath and lime plaster. Where plaster is missing and the interior faces of the exterior logs can be seen a few years of whitewash applications can be observed.

Most of the original second level shop flooring remains. The floor boards are random width, tongue-and-grooved, hand-planed pine and surface nailed to the joists. The floor boards originally rested on a series of eight, four side hewn joists spanning east to west. The floor joists remain independent of the log walls resting on the inside edges of the thick first floor stone walls. The joists generally measured 5-1/2" x 7" with slight variations. In addition to the eight free span joists, there were two planks laid one each on the south and north stone walls. These joists and planks were used to fasten the flooring to the gable ends. Only the two planks and two of eight original joists remain. The rest of the joists have been replaced. The second floor's oak joists were spaced on roughly 28" centers.

Evidence indicates that a now missing interior east-west partition wall was installed in the second floor shop to make two rooms. The evidence indicating the presence of a vertical board partition was a small notch cut into the upper rail of the west wall chair rail and a series of nail holes along the south side of the center loft joist. The wall was likely installed to close down the original single room work space. The partition wall was removed before the mid-1930s, if not earlier, based on the memory of the oldest living informant⁶ who said she never saw the wall. While the wall was probably installed in the 19th century, no evidence exists to discern a possible date for the partition.

The only evidence there was ever any heat in the current building was a 5" diameter circular hole cut through the loft flooring. Placed evenly around the hole and screwed to the floor were metal spacers called "stand-offs". A smaller diameter vent pipe passed through the floor. The metal standoffs kept the hot wood stove pipe away from the wood flooring. The size of the flue hole in the floor indicates a 4 - 1/2" vent pipe suggesting a small wood stove was used to heat the north room at least for a short period of time.



Looking down from the loft through the stove pipe opening. Two of the three metal spacers remained nailed to the flooring. Charred edges of the flooring indicate hot conditions existing, and flooring was overheated.

⁶ Frances Graber Manwiller was the daughter of Elmer and Mary Schubert Graber; Frances and her husband Paul lived with her parents on the farm for a short period in the 1950s. Much of the historic details in the nomination were provided through interviews with the Manwillers.

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There was no other evidence of a permanent heating or cooking system in the shop. No masonry hearths, fireplaces or chimney stacks were ever part of the existing building. There were no openings for firebacks, no framing on any level to indicate headers for a chimney or hearth, and no roof framing indicating a masonry chimney passed through. On the second floor no marks on the flooring suggest the position of the wood stove or any other device used for heating. There were no indications the wood stove and metal flue pipe were anything other than a temporary installation that saw very little use. A cook stove typically had a larger diameter stove flue pipe. However, the existence of a stove that also served cooking purposes cannot be ruled out.

The current shop building contains a mixture of handmade nails and machine-made nails.⁷ Handmade nails fasten the first floor boards to the sleeper joists,⁸ the vertical gable end siding to the top gable log plates and the rafters above and also fasten the roof lath to the rafters. No nails were recovered from the second floor flooring and they were also probably nailed with handmade nails. These handmade nails were put in place during the initial raising of the green log shell and likely date shortly after Melchior moved to the property, placing the initial raising of the current log shop building from roughly 1795+/- . The existence of machine made cut nails used to fasten the window components and trim items within the building indicate a post c.1811 date.

The difference in the nails means there was a transition from handmade, used during the initial raising of the log shell, to machine made nails used when the building was trimmed out and the stairs added. The differing nail technologies provide the basis for the range of dates. Melchior Schubert's arrival on the property provides the earliest date for a terminus ante quem⁹. The existence of handmade nails provides the latest date for a terminus post quem placing the initial construction of the second period shop building squarely in the mid ninth decade or c.1795 of the 18th century. The finishing of the building occurred after the structure had "cured" or dried in place for a few years and after money and other circumstances permitted Melchior to finish out of the interior. The trims were all applied with one operation square cut nails, which had to date shortly after 1811 when the final significant improvement had been patented that allowed nails to have shanks cut and heads stamped in one pass through the improved nail making machines of the day.

Log Walls and Posts

Strong circumstantial evidence indicates the reused log materials repurposed into the walls of the second period log-post shop came from the first period log crib. The strength of the evidence indicates the enlarged foundation for the second period shop building was specifically designed to use the maximum amount of wall logs salvaged from the first period building. The first period building's exterior measured at least 15'+/- in width and was 17'-7" in length.¹⁰ An adequate number of long logs were salvaged from the first period building that sat on the current site of the log shop. Even after almost all the V notched

⁷ The mixture of nails is more typically found in buildings where older stocks and new types of nails were both still available. Machine made nails were first offered for commercial sales in the form of the 1793 tack and smaller nails. However, problems with the machines gripping the nails persisted until c.1811 when improvements to correct malfunctioning nail machines were placed on the market. After 1811, square cut nails were widely available.

⁸ The second floor flooring would also have had handmade nails used to fasten the flooring to the original joists, but many of the joists have been replaced. The second floor flooring was lifted, many new joists installed and the old flooring renailed with newer machine made nails. No evidence came to light to indicate why the earlier joists were replaced.

⁹ This term translates to "the last possible date." Terminus post quem refers to the earliest date which something could have happened.

¹⁰ The length of the first period building was difficult to measure due to site conditions. The wall may actually measure up to 18' in length.

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ends were trimmed off the wall logs for use between the second period corner posts, the logs were still long enough to work inside the posts of the second period log shop. For instance, the first period eave wall logs were originally 17' - 6" or 7" in length. Both ends were formed with V notching. The net salvaged log would have been 16'-6" after removing the two V notched ends. The length of the logs needed for the second period building to run from corner post to corner post in the north gable end was 16' 6". The rest of the salvaged logs were used for the short lengths between the corner posts, door posts and window jambed openings, all of which spanned shorter distances.



In the left photo, two blocks are visible left of the window. The smaller, upper block extended a log's width. The larger block below it filled in a window or door opening cut for the earlier building. In the right photo, this log, just under a top plate, had four joists remaining from the prior building.

The character of the in-fill horizontal wall logs provides further evidence that they were salvaged from the earlier first period building. The evidence includes cut-down portions of formerly-longer logs and one remaining "V" shaped notch. There are a few instances of log blocks used to fill in gaps in the logs just a few inches too short. Two south gable logs located just under the gable tie plates have joist seats filled in and reused as wall logs. Another log has an empty cutout where a window was formerly located in the earlier building. With the exception of six new infill wall logs needed to complete the c.1795 initial raising of the shop, the remainder of the infill wall logs between the four corner posts and the various wall openings consists only of reused wall logs from the first period's "V" notched log crib¹¹. The use of the salvaged logs is easily traced to the former building on the first period stone foundation. A significant telltale sign is the one surviving V notch high in the east shop wall has the same slope and the same spread at the junction of the V or the apex as do the V notches in the associated farmhouse across the road. Each of the current shop walls have openings. The salvaged logs were mostly shorn of their V notched ends. The salvaged logs were cut to fit the distances between posts and opening jambs. All but one of the V notches was cut off. The squared, cleaned log ends were cut into tenons. It appears obvious from the reuse of the former wall logs that the master builder purposely planned the new building to gain maximum use of the first period building wall logs. The reuse of the existing first period logs in the expanded second period structure reduced the need to harvest and hew about two dozen more new logs from the forest or woodlot.

¹¹ Crib is a common term used in past centuries in reference to log construction. In Merriam's 1851 edition of Webster's Dictionary crib is defined as a "small habitation or cottage."

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Below, a reused log with a prior "V" notch still visible. Right, a new corner post created for the second period of construction when the original building was rebuilt.



In addition to the reused older logs, there were many new logs used in the timber frame for the enlarged structure. New logs were hewn from fresh trees felled during the second period construction. The new logs were for the floor joists needed for the expanded size of the building, four corner posts, the sills that ran the full length of the walls, the three long logs that spanned the length between the west, front eave wall corner posts, the three logs that spanned the width of the north gable wall between the corner posts and the full length top plates that captured the four corner post tops. The corner posts were neatly hewn on all four sides to create a smooth, flat condition. The skill of the person who cut the four corner posts is readily apparent in the sharp right angles of the corners and the flat smooth condition that can still be observed of the protected interior post surfaces.

The four corner posts are all constructed with the same design. The eave sill ends are formed in a dovetail sandwiched by the gable sills and the posts. The back sides of each of the posts have a stub tenon¹² that is mortised into gable sill. The stub tenon assists in keeping the post from twisting. There are eight posts. Four of the posts were for the corners of the building's second floor log walls. The remaining four posts formed the two door locations. Two of the posts located in the south gable defined the only man door leading into the second floor. The last two posts formed the opening in the east rear wall for the large wagon doors. The four corner posts have two sides each that receive the tenoned ends of the horizontal logs. The other sides remain uncut and face out to the exterior. The four corner posts measure roughly 6" thick by 9" wide. The wider corner post sides face the gable ends, while the narrower sides face the eave walls. The four door posts each have only one side intersecting with the log walls while the remaining three sides are flat. The four door post sides that intersect with the logs make a grand total of twelve post sides that receive the tenons of the horizontal infill logs.

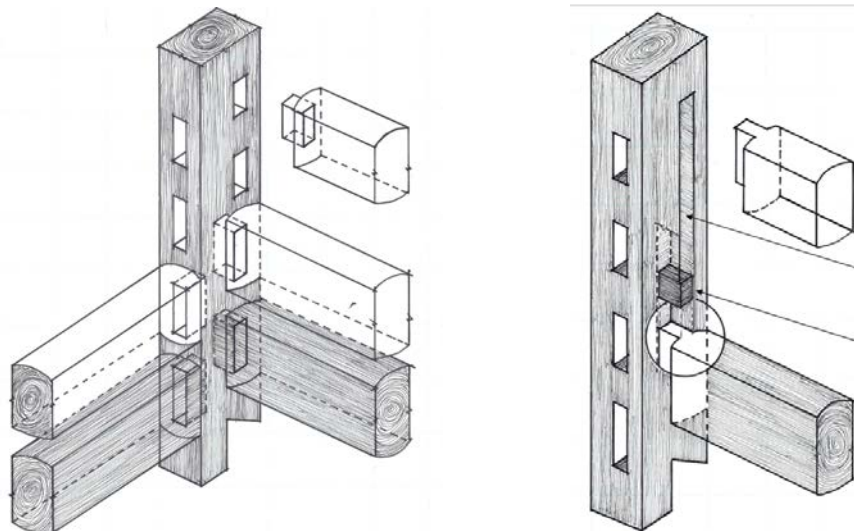
Ten of the twelve post sides are cut with individual mortises to lock the tenoned log ends in place. As the logs were raised into position, the tenons were placed into the long grooves. Blocking was hammered into

¹² Stub tenon is a short projection that is fitted into a mortise. Only 1" to 2" in length the stub tenon is usually not a pegged joint.

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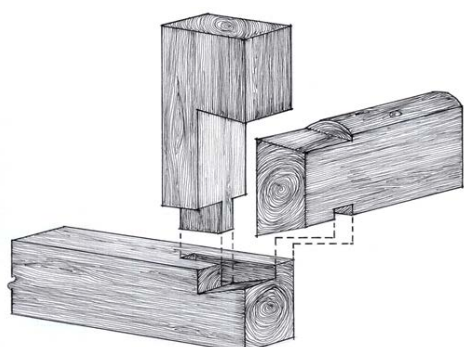
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the grooves between the logs to support the logs in their desired locations. The remaining two post sides each had a long continuous trench mortise cut nearly the full length of the posts. These two posts are situated side by side only 18" apart, adjacent to each other at the south wall next to the southeast corner. One post is the southeast corner post and the other is the east side south wall man door post. Why the shop's posts exhibit two completely different types of mortises has yet to be discerned. Each of the corner post tops were locked in place with an offset cog further secured by mortise, tenon and peg joinery.



Two types of mortises were used in the corner posts—individual mortises, shown in the left drawing, and trench mortises, in the right. Small oak blocks in the trench mortise spaced the logs the desired distance apart.

The structural design for the building's second-floor framing did not include braces¹³. Braces were typical members often made of oak used to stiffen a frame against the pressures of the wind. The shop has four corner posts and log in-fill, but no braces. In order to compensate for the lack of braces, the builder had to firmly secure the upper and lower post ends with complex joinery. The joints include stub tenons, by-pass mortise and tenons, half dovetails, laps and cogs. The complexity of the corner joinery securely locked the intersecting sills, plates, posts and wall logs together into a rigid frame.



Complex joinery was needed to keep the building tight and sturdy. The drawing illustrates the corner post bottom to sill joinery used in the shop.

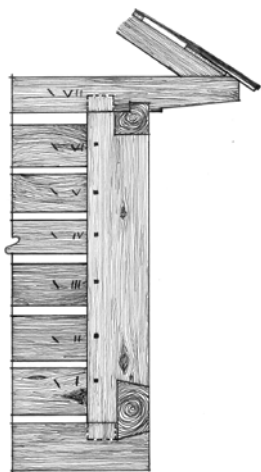
¹³ Braces were usually made of hard wood and let into the surface of several logs at a 45 or 60 degree angle. The ends of braces were often attached to a post and the other end to either a sill or top plate. There are many variations on the placement, size and fastening of braces to log infill walls. The log-post shop building did not have braces.

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As with most timber frame buildings erected using the scribe rule layout method, each joint between two members was unique. Each wall was laid out and cut on a scaffold. As each wall was assembled and trial fitted, it had to be disassembled and laid aside so the next wall could be manufactured. In order to reassemble each wall with all its components correctly reassembled to their unique locations, each component had to be marked in order that the pairings between members that fitted together were correctly mated. A pair of duplicate marks was cut into two mated components near each joint. The marks were often cut into the wood using Roman numeral figures and slashes such as those found on the exterior walls of the shop. The Roman numerals and slash marks that indicate where various members join together as the logs were raised are often referred to as "marriage marks". There are marriage marks on the shop building cut on the exterior surfaces of the logs. The Timber Framers Guild defines marriage marks as incisions made *"in timbers to indicate their proper placement in the frame when matched to identical marks on an adjoining timber... any marking system to aid assembly or reassembly of individual fitted joints."*¹⁴

In the shop building, the series of Roman numerals and slashes uniquely identify the pairing of members and indicate to which wall panel they belong. The shop wall Roman numerals ascended from the bottom sill to the top plate numbering 1 through 7 (in the Roman style I thru VII). Slashes were observed only on the two opposing eave walls. A Roman numeral followed by a single slash (/) told the builders the logs with single slashes were part of the west front wall. A Roman numeral followed by a pair of slashes (//) indicated the logs belonged together in the east, rear wall. For instance, the top plate joint on the east wall over the south end corner post is marked "VII //". No evidence exists of the south or north gable-end wall logs being marked. The absence of the marks on these two unmarked walls is not unusual. The differences between the two remaining unmarked gable walls were great enough in terms of the length of the logs and the differences in the window/door opening sizes and locations, that the builders were able to identify which logs belonged in a certain wall as they were being raised.



Roman numerals and markings carved into the logs indicated how they would fit together. Slashes indicated a particular wall, and numbers denoted the order of the individual logs within that wall. Here the numbers rise from the bottom log up, from 1 to VII.

¹⁴ Rower, Kenneth, ED. *Timber Framing Fundamentals*, Timber Framers Guild, Alstead, New Hampshire, 2011, Glossary, pg. 277.

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With somewhat wide interstices between the logs in all four walls, only the south gable end retains a small amount of split wood chinking.¹⁵ Chinking is used to bulk fill the gaps between the logs. There was very little chinking remaining in the front, north gable and rear walls. Almost no chinking remains in the rear wall. For instance, the narrow spacing of the crack between east wall's top courses indicates the crack was never chinked and daubed. In many other cases the narrow cracks between the logs did not appear to have any chinking ever installed. It almost seems as if there was no great need for totally chinking the logs and the three walls were never fully chinked. It is apparent the daubing¹⁶ was installed mostly from the exterior in all four wall walls to fill the openings between the logs. In many places it was observed the mud daubing was pushed in from the exterior toward the middle of the logs. There were no wood grained imprints left on the interior sides of the daubing indicating there was no wood split block or stone chinking in those locations. Only in the south wall are there long split wood wedges and pole chinking forced between the logs to fill the interstices higher in the wall. The longer pole chinks were held in place with short wooden pegs driven into the logs to secure the oversized chinking place. The irregularity and scarce use of chinking throughout the walls was due to the fact the building was apparently planned as an unheated shop and not a dwelling. The interior sides of the logs were intended to be covered with plaster and did not need to be chinked and daubed. Only what appears a half-hearted attempt to install chinking in the shop walls was undertaken and the effort was never completed.

The exterior spaces between the wall logs of all four walls were originally daubed to fill the space between the logs. The exterior log walls needed daubing to make the walls tight against the weather. Wet clay bed daubing was applied only to the exterior shop walls by an inexperienced hand and not well done. The majority of the daubing was a cheap bed daubing mix of clay and poor quality chunk lime with a small amount of stream bed sediment containing water-washed small aggregate and grass fiber used as a binder. The soft bed daubing was never meant to be left exposed to the weather. As was the usual practice of daubing installation in the mid-Atlantic and beyond, the bed daubing was the majority quantity of material needed to close the gaps between the logs. A much more pure thin coat of lime daubing was troweled over the bed daubing to protect the weak clay daubing from deteriorating. However, lime was expensive and only used in a purer form as a protective coating to the cheaper filler daubing. After the all clay mixture bed daubing dried, a thin white lime coat was troweled over the clay daubing on the exterior.

Only in the south wall is there any original lime, clay and sand-based finish daubing in place. Looking behind the plaster on the interior of the south wall no interior side daubing was applied. There is chinking and daubing placed between the logs of the south wall, but only on the exterior and not on the interior side of the log wall. The daubing on all the walls of the shop has never been maintained. Much of the exterior daubing has fallen out of the walls on the three unprotected walls. A small amount of finish south wall daubing survived due to the protection of the first addition placed against the south wall sometime in the late 19th century. The later c.1936 garage addition that replaced the first south wall addition continued to provide protection.

¹⁵ Chinking is composed of short pieces of wood, stone or bricks used to stop up the interstices between logs. Chinking was the mechanical matrix upon which daubing was applied to tightly close the gaps.

¹⁶ Daubing is a clay/lime applied over chinking to fill the gaps between logs. Daubing used in the Schubert shop consisted of two basic types. The bulk of all daubing was a cheap clay mix applied to fill the gaps between the logs. The bed daubing was a soft and impervious application that would wear away very quickly if left exposed to the weather. A harder finish daubing was lathered over the clay bed daubing. Almost a pure mixture of lime, the finish daubing was troweled over the bed material to protect it from the weather.

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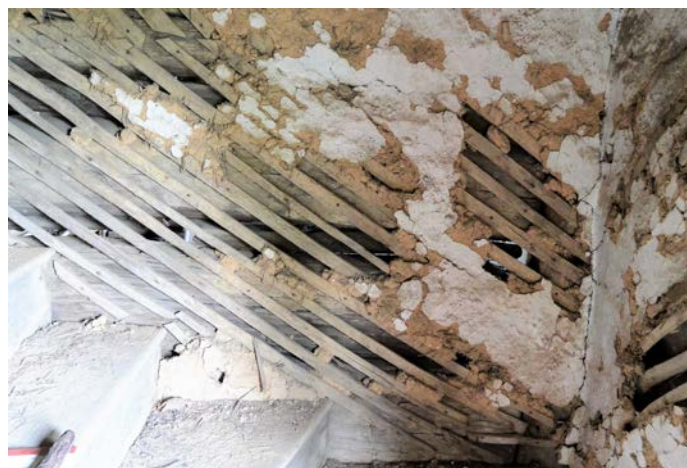
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Evidence suggests that many log interstices never had chinking (left). Only the south wall was fully chinked (right), and the chinking was only for the exterior daubing. A few of the long chinking pieces were pegged in place.



The mud daubing, a mixture of clay, stream bed sediment/sand, and a very little chunk lime was used to fill the bulk of the cracks. (left) Without lime coat protection, the mud daubing weathered very quickly. Very small amounts of original lime daubing were located on both the gable end walls. The south gable daubing, shown here (right), was applied during two different periods. The narrow V joint profile is original. It was later covered by the more liberally-applied lime coat during a second campaign of daubing.



Looking through the lath in the second floor stairwell, no interior daubing was ever present in the south wall, and very little was present in the other three log walls.

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The shop building was whitewashed only for the first several years after initial construction. Very little whitewash evidence remains.¹⁷ It is very clear that the shop's deeply weathered logs and posts have been exposed to the weather without any whitewash protection for many decades. The thorough lack of whitewash may indicate the building was not whitewashed for over a century. Only on the few remaining pieces of lime daubing and a spot or two of logs directly under the roof overhangs where the wood surfaces were protected can any whitewash be detected. Scattered in locations spread over the exterior, there is definitely enough evidence to state the building was whitewashed on the exterior for its first several years. Most likely the stone foundation was also whitewashed.

Loft

The shop's third floor loft level consists of two rooms. The original single room loft was divided into two rooms in the mid 20th century. Scrap wood boards, likely gathered from around the farm, were hastily nailed against one set of rafters near the center of the loft. There is a single doorway in the middle. Over the partition doorway is a weathered reused single six light sash that perfectly fits the open south gable slider window. Both gables once held single six light sash slider units. The north gable window opening is boarded over and the sash is missing. The south gable window is open and the original six light single sash is repositioned over the middle partition doorway. The two gable windows are different sizes. The southern window opening is visible above the roof of the first addition in one of the historic photos. The size of the south gable window opening in the siding measures 18" wide by 32" tall. The nail holes and marks left on the interior side of the original south gable siding indicates the south sash was placed into two sets of horizontal slider tracks. One set was above the window opening and the other set at the base of the opening. The sash was simply pulled in front of the opening to close it or pushed out of the way to open the window. The northern gable end's opening measures 29" wide x 22" high, which is the size for a fixed single sash with six lights, each piece of glass measuring 8" x 10". The original north gable single sash was not found. The current north gable window opening is filled with an oversized replacement six light 20th century sash. It was not determined if the north gable opening was original or modified. Traditional construction for the period would have dictated that both gable sashes would be of the same size. If that held true for the shop building, the original sash and size would match the existing original sash and south gable opening.

The loft's original north and south gable vertical siding remains in place. Both of the gable ends above the loft floor level are sheathed with vertical random-width, tongue-and-grooved, sash sawn hemlock boards. Small battens were placed over each crack where the boards meet. The siding is fastened to the gable studs with handmade pointed end nails with narrow hand hammered heads. The south gable siding is fully protected by the garage addition.

The staircase from the second floor to the loft contains two doorways. One of the two door openings is under the stairs accessing a closet. The second door opening was at the foot of the stairs rising to the loft. Both of the door openings were trimmed with single field casings decorated with beads on the interior edges. The unpainted casings were original to both openings. No hinge or lock/latch mortises were found on the casings. There is no evidence that doors were ever hung in the two staircase doorways.

As described above, at one point in time, it is likely there was a wood stove installed in the shop's second floor. To retain as much of the heat as possible within the second floor's north room workspace, a board

¹⁷ Whitewash does not chemically bond to wood. If whitewash was not renewed on a regular cyclical basis, it would eventually completely disintegrate and disappear from the walled surfaces of a building.

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and batten door was laid face down on the loft floor level to cover the stairwell opening. Leather hinges were nailed to the door and the side of the south side of the floor around the stairway opening. The leather hinges remain nailed to the side of the stairway opening. The loft door was not in the building when studied.

The loft's floor joists have chamfered lower edges exposed to the second floor. All of the original loft joists remain in place. The oak loft joists exposed to the second floor below are finished to a higher degree than the second floor joists exposed to the first floor. All four sides of the loft floor joists are hewn flat and further hand-planed for a smooth appearance. The loft joists measure approximately 5-1/2" wide by 6-1/2" deep. The joists are set roughly on 36" centers. They extend beyond the east and west eave wall top plates by 16" and serve a dual purpose as both bottom chords to the placement of rafters, as well as front and back overhangs for the building. Where the joists pass over the walls they are cogged to hook over the top plates. The cogged joints help to maintain the joist positions. The depth of the cogged joint cuts is from 2" to 3" depending on the slight variations in joist sizes. The top ends of the extended joists are mortised back two inches from the tip. The shallow stubbed tenons of the rafters sit in the mortises. The very top ends of the joists are beveled to accommodate the roof sheathing.

Roof Structure

All of the original second period oak rafters remain in place measuring 4-3/4" wide by 4" deep. The rafters are roughly hewn all four sides with waney edges¹⁸ and sap wood¹⁹ left at corners. Some bark remains on the rafters. The rafters are not tapered from foot to peak. The rafter foot ends are stub-tenoned to fit into the shallow mortises cut into the top ends of the loft joists. The rafter foot to loft joist connections are not pegged. The rafter peak joints are open mortise and tenons also lacking pegs.



The rafter peaks were joined with open mortise and tenon joints, a very common method for joining rafters together except there was never any pegs. The lack of pegs here is very usual.

Of the thousands of log buildings inspected, the nomination's author has never seen rafter peak and foot joints left without pegs. Pegs were a necessary part of securing the joints of the rafter to the building. When high winds blow across a roof peak, there is a tendency for the leeward side of the roof panel to lift. A very strong wind approaching 60 mph can take a roof off a building. It is truly remarkable the rafters

¹⁸ Waney edges are the rounded natural shape of the tree left from a hewing effort that did not cut away enough wood to make a sharp right angled corner.

¹⁹ Sap wood is the outer most wood of a tree just under the bark that carried nutrient to the tree while it was still alive. Sapwood is the most vulnerable to rot and was often cut away from trees.

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and roof sections on the shop building are not only the original components, but that they have survived over two centuries of high winds.

The few remaining original narrow roof lath measure 1" x 2" making the lath unusually small in section dimensions. A far more typical size for roof lath was 1-1/8" x 2-1/4". The existing laths were nailed to the rafters every 10". The 10" centers indicated the original wood shingles were exposed to the weather 10".²⁰

The spacing of the roof lath indicates there was an initial handmade wood shingle roof covering the building. The shingle courses were exposed to the weather 10". The length of the exposed portion of the shingles indicates the type variously known as feather or bevel edge, lap, and long shingles. While the roof lath nailed to the rafters appears to be early, there is no place at this time where the rafters and lath could be reviewed from the top side to determine if the existing roof lath was the original or a subsequent set of lath. Handmade nails were observed in two locations on the rafters, but not those used for fastening the roof lath to the rafters. Confirmation of the lath being early awaits a careful examination during the process of restoration and/or a future roof replacement.

The existing roofing material is corrugated, galvanized, stamped sheet metal. The roof sheets were nailed through the top of the ridges into the lath. The current roof is painted and in good water-tight condition. Any intermediate roofing laid between the original wood roofing and the existing sheet metal roofing was not detected during the forensic investigation due to lack of access to the top side of the rafters. The galvanized roofing was, according to Bruce Mordaunt, laid in the early 1990s.

Barge Boards and Gable Siding



Visible from inside the garage addition, left photo, looking at the original south end wall, barges were cut around the roof lath and had 1/4 inch beads along the bottom edge. The bead is hard to see in the photo as most of the beading has weathered away. The photo on the right shows the north end's tongue and groove boards. The north gable end barges are no longer extant.

The original south gable barge boards remain. The south gable barges survive due to the garage addition covering the gable. The remaining barges are a feature seen from inside the second story of the garage. Made from a small piece of hemlock measuring 1" x 2-1/4" wide, the barge boards were nailed to the face of the vertical siding. The barges were cut to fit around the roof laths which extend past the barge boards to allow a minimal overhang. The small barge is beaded at the lower edge. The two north gable barges are no longer extant. Both of the gable ends above the loft floor level were sheathed with vertical random width, tongue and grooves, sash sawn hemlock boards. Small battens were placed over each crack where

²⁰ Shingles are laid in horizontal courses layering several times one over the other. There is a portion of each shingle course that is not covered left exposed to the weather. The portion of the shingle left uncovered is called the shingle exposure.

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the boards met. The siding was fastened to the gable studs with handmade pointed end nails with narrow hand hammered heads.

Garage Addition

The current two story garage addition built against the south gable of the log shop replaced an earlier, smaller frame addition to the shop. From inside the second floor of the garage the earlier addition's roof line can be observed on the original south gable siding still in place and protected by the larger garage addition. An enlarged detail of the former addition taken from the c.1936 photo indicates the addition also projected out past the front of the log shop by a few feet. It was covered with vertical board and batten siding. The roof line of the first addition was lower than the roof of the current garage addition. It is obvious the foot print of the earlier addition was smaller. The earlier addition's west side front wall facing the road consisted of two bays; a door located in the south position and a window in the north position. There was also a single window in the south gable wall. No information of the first addition's use was discernible from the historic photo. Sometime between 1936 and 1937 the first period addition was demolished and the current two story garage addition was erected. The date was established by researching the overhead door hardware, historic photo analysis, and interviewing Frances Graber Manwiller and her husband Paul. Frances Graber was born in 1932 and has no memory of the former addition predating the c.1936 garage.

Garage - First Floor

The first level of the garage consists of two car bays opening to the south side, each with its own multi-panel overhead garage door. The original operating handles are still on the garage doors. The handles were stamped Calder Mfg. Co., Lancaster, PA #14042. A search of the Calder MFG. Co. name on Google found a Wikipedia article describing the company as prominent garage door makers during the 1930s. The east wall of the garage has a poured concrete rear bank wall. The west wall has a low poured concrete foundation wall with light framing finishing the height of the wall. The garage floor is poured in place concrete with a short concrete apron poured just outside of the garage doors. The wood structure on the foundation and attached to the south gable end of the log-post shop is of light timber framing. The frame is covered with milled vertical tongue-and-groove, white-painted wood siding. The current roofing is corrugated sheet metal installed in the 1990s. There are two 1930s windows on the front wall, both six-over-six light, double-hung sash. The sash and frames appear to be original to the garage addition.

Garage - Second Floor

The second floor of the garage addition consists of a single room. The structure is timber framed with two bents; one bent forms the south gable. The other bent was placed in the center between the south gable bent and the south wall of the log-post shop. The second floor is open to the roof peak, with no loft level for additional storage. The interior walls are of exposed framing with no trims anywhere on the walls or openings. There are three windows in the upper level. Two are on the front wall facing the road, and one is centered higher in the southern gable end. The three windows match those of the first floor and appear to be original. The rear wall of the garage has a wide single track mounted sliding door that rolls to the south. The woodwork of the east wall tracked door is not original. It appears to have been replaced late in the 20th century. The sliding door covers a large approximately 8' wide opening for machinery to enter the upper level of the garage from the ramp behind the building. There are no openings built specifically for the garage in the north wall. Most of the garage's north wall is the south wall of the log shop. Access to the second floor of the garage is through the large sliding east wall door. There is no internal stair or ladder from the first floor garage bays. Access to the log shop through the one south wall man door can only be reached by coming through the large sliding door and into the second floor of the garage addition.

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The log shop south wall man door is just inside the garage's east wall sliding door. The single slider door is made of vertical tongue and grooved boards hung on a track system dating to the 1930s. It was present and operable at the time of this study. The existing door is likely a replacement though the tracks and hangers appear to be of a design that could date to the original construction.

Integrity

The loss of the associated Schubert-Graber farm buildings and the residential development of the surrounding farm landscape is unfortunate, and as a result the setting, feeling and association of the property have been compromised. However, for this building, the location, materials, workmanship and design are the most important aspects of integrity. Further study of the building and its site can still reveal details of its construction and use. Melchior Schubert's will identified him as a cooper. There are marks on the walls of the second floor of the log shop that suggest a tool used to make circles was scribed into the board wall of the stair case; this is in keeping with a tool used for layout of larger barrel parts.

The log-post shop side of the building retains substantial physical material integrity estimated at 80% to 85%. Both the original second floor south gable man door and the first floor front door are missing. The two second floor wagon bay doors are in storage on the second floor of the garage addition. The three existing jambs of the upper story shop windows are original to the building. The original second floor window sashes are missing. The extant sash are the wrong size and do not fit the window jamb openings. Fortunately, the three opening jambs retain the sash supports and beads which provide details of the original size and configuration of the missing sashes. One of the two original loft floor gable-end sash were found on the loft floor level. The log walls are nearly 100% intact with all but one log in its original location. Many of the north wall logs are severely weathered and need restoration, but most, if not all logs, can be stabilized and restored in-situ. Five of the second floor joists are original, the others have been replaced. All the loft joists are original and are in good condition. The rafters remain and most appear to be restorable. A few pieces of the original roof lath were found in place on the rafters. Even more amazing was the presence of thin sawn hemlock boarding on the north and south gable walls above the top plates. Though heavily weathered, the boarding is still extant. The first floor level flooring and joist system was largely missing. Most of the first level system flooring remnants may need to be replaced. The remains of the first floor joist and flooring system allow a complete understanding of the first floor system which in turn allows for a detailed restoration of the flooring.

Despite the loss of the second floor windows and the man door as well as the first floor flooring and joists, the visual integrity of this small building remains high. The entire building can be studied and understood in most details. Fortunately the jambs for the windows and doors are extant. The jambs in all cases retain enough evidence to recreate the missing windows and doors exactly as they were first configured. The exterior beads, jambs and sill construction dictate the size and number of glass lights in each sash. The south man door jamb/door posts retain the original pintel hinges indicating there was a Dutch style two leaf plain door. The few remaining first floor joists may actually have enough physical integrity they might be reused in the restoration. The few pieces of first floor flooring are solid enough to copy. If any of the existing few pieces of original first floor flooring can be reused, they can be installed as document pieces.

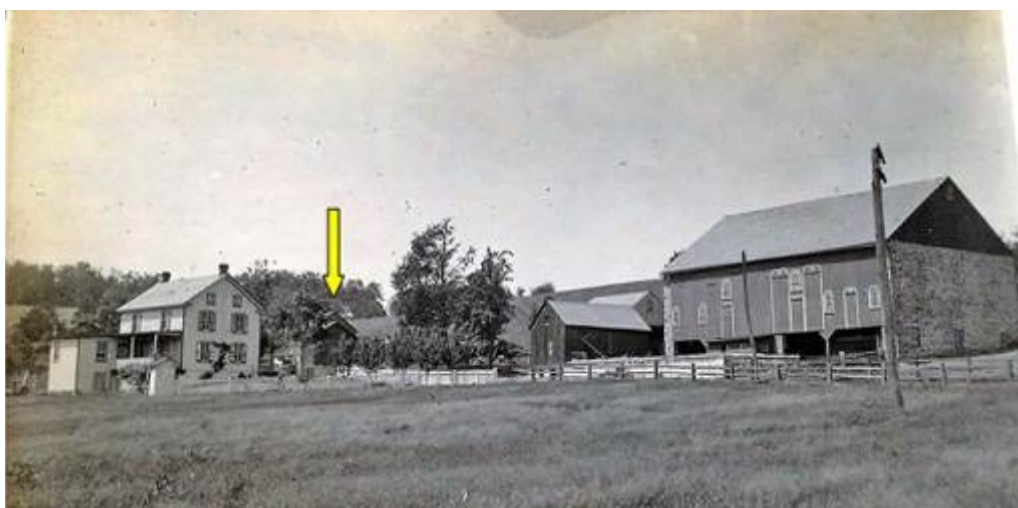
The garage addition of the building retains nearly complete physical integrity, with its intact framing, siding, windows, doors and hardware. There are only minor repairs that need to be made to the garage. The entire addition can be restored to original condition and appearance. No changes of any kind were made to the log shop side when the garage addition was built next to it.

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The Schubert-Graber Farmstead

Following are descriptions of Schubert-Graber buildings and structures that once made up the farmstead. Most were demolished when the property was acquired by a developer in 1992. The descriptions are based on photographic evidence and three interviews with Paul and Frances Graber Manwiller.²¹ Three older photos available for consultation included aerial views of the farm complex taken 1974-1981 before the farm was sold out of the family.²² In addition, information was gained through an on-site inspection of the surviving main farmhouse. It was remodeled in 1984 by the Chichockis, the current owners.²³ Gayle Chichocki permitted a detailed review of the interior of the historic portion of the log house. She also provided a photo scrap book covering their renovations of the main farmhouse. This information is provided as a resource for future archeological investigations and to lend context to the log-post shop.



Farmstead, c.1936. The yellow arrow points to the log shop with its earlier addition.

Land

The farmland owned by the Schubert-Graber family was divided by Powder Valley Road. The road descended on a northeast to the southwest axis from a hill to the north of the farm complex. As the road dropped in elevation the hill began to ease and somewhat level out at the log-post shop building. The rest of the farmstead buildings clustered on either side of the road. The log shop, a corncrib/wagon shed, a piggery/chicken house, and a Pennsylvania bank barn with a wood-coped stone barnyard wall were all situated on the east side of the road. The hill leveled out a few feet above the barn ramp where the ground

²¹ Paul and Frances Graber Manwiller were extensively interviewed on two occasions with many follow up phone conversations. The interviews resulted in detailed knowledge about the farm and its buildings. Frances was the youngest daughter of Elmer Graber, the last farmer of the property, and his wife, Mary. Elmer Graber was the son of Laura and Frank Graber. Laura was Reuben Schubert's daughter. Elmer Graber was the last direct Schubert descendant, via his mother Laura, to operate the farm. Mrs. Frances Graber Manwiller was born in the log farmhouse and grew up on the farm. She later returned to live there with her husband between 1950 and 1956. Neither of the Manwillers ever remembered anyone living in the small log shop across the street since her birth in 1932 or during or since living at the farm through 1956. The current owners are Tom and Gayle Cichocki. Gayle Cichocki was also interviewed. Mrs. Cichocki permitted a thorough inspection of the farmhouse including the attic and basement. She provided many print photos of the renovations that she and her husband performed on the log house. Several photos showed the bare log walls and other features of the historic house.

²² Bruce Mordaunt, current president of the Hivel Und Dahl Society, currently has possession of the aerial photos.

²³ Mrs. Cichocki permitted the nomination author a thorough inspection of the farmhouse including the attic and basement.

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was cleared for cultivated fields. The log-post shop was historically located on a cleared and open piece of ground.

On the opposite side of the road were the main farmhouse (extant), at least two privies, yard sheds and chicken houses, all rested on well-drained ground. The grade descended in a shallow slope to a narrow spring fed stream in the middle of the field a short distance west of the main house. Just past the barn the road made a sharp right westerly turn. The c.1910 photo showed a dirt road, horses and carriages, the wood coping on the stone barnyard fence, a split rail and drilled post fence along the roads. Paul Manwiller said the Graber land was about 107 acres when he and his wife worked on the farm for his father-in-law Elmer Graber from 1950 to 1956. Manwiller also said the Grabers rented an additional 200 acres. The Grabers and Manwillers farmed a little more than 300 acres at least during the time the Manwillers were on the farm in the early 1950s.

Main Farmhouse

The main farmhouse still serves as a residence. Paul and Frances Manwiller and Gayle Cichocki, current co-owner, saw portions of the horizontal log walls during different campaigns of interior remodeling. They verified the main core of the two story, four room farmhouse was built with horizontal log walls. Fortunately, Gayle Cichocki, the wife of the current owners, took photos during their extensive remodeling in 1984. Because the rear addition was basically gutted and rebuilt, one photo clearly showed the unshouldered "V" notched corners of the original cross-cornered horizontal log crib.

The main house was not built parallel to the road. While it faced the road, the front of the house was oriented with its principle facade facing a few degrees more to the northeast than parallel to the road. The odd orientation of the main farmhouse allowed direct access to the work yard and gardens immediately behind the house. More importantly, the kitchen walls and windows faced south towards the sun. The house was located in a slight slope of a hill allowing full grade level access to the basement level at the back southwest side of the house. The above grade foundation wall had two fixed in place nine light single sash in heavy oak frames set into the stone walls and one two-leafed board and batten door. The exposed foundation stone wall was finish pointed with a "V" joint profile. The southwest basement wall was protected by a post supported double story full length porch. There were two rooms flanking a central hallway/staircase on both the first and second floors.²⁴ The stairs began in the basement, wound up the two main floors and provided access to the full attic. There was a full basement within the stone foundation under the main log crib house.

Domestic Outbuildings

To the west side of the farmhouse was a detached two story shed roofed summer kitchen. The summer kitchen has been demolished. Two privies were observed in historic photos. One privy was located along the south fence enclosing the rear yard. A second privy was located along the west fence. Two small chicken sheds can be seen in a photo of the barn complex used in a 1938 *National Geographic Magazine*. They were located on the west side of Powder Valley Road, across the road from the barn.

²⁴ Manwiller, Paul. Personal communication. Paul and his wife Frances clearly remembered the four room central hall plan of the log farmhouse.

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Image used in a 1938 issue of National Geographic magazine, showing chicken coops, wood silo, barn, stone barnyard wall, and piggery/chicken house, and gable end of drive-thru corn crib. (all demolished)

Barn

A large stone barn was located just to the south of the current property line held by the Hivel and Dahl Preservation Society. The closed stone-end wall, timber-framed, asymmetrical barn was built in 1865²⁵. The barn had a 9/12 pitched gable roof with the peak centered over the second floor timber frame. Paul Manwiller remembered the barn with four bays on the interior. An aerial photo dated 1982 showed the rear of the threshing floor level barn. The photo seemed to verify there were four bays consisting of two hay mows and two wagon bays. The barn no longer exists.

Milk house

Attached to the north end of the bank barn was a frame shed where a 20th century stainless-steel tank stored the milk until picked up by the milk truck. The shed was built to keep milk cool until it was picked up by the trucks. Prior to the stainless steel tank, there was a wooden trough with free flowing spring water constantly running through the shed to keep the milk cool. The running water was delivered to the shed by an underground clay pipe system from a spring to the north of the property. The small shed first appeared in a 1933 photo of one year old baby Frances Graber with the barn in the background. The underground clay pipe and water shed was likely constructed shortly after the barn was erected in 1865. It is possible the clay pipe system was older if it served a previous barn.

Piggery/chicken house

Located with its gable end facing the road in the SW corner of the barnyard was a dual-purpose hog and chicken house. It was most likely built in the 19th century and first appeared in the earliest photo dated c.1910. The stone foundation was constructed to house hogs under the timber framed chicken coop which

²⁵ Manwiller, Paul. Paul was absolutely clear about the 1865 date. It was marked on a date tablet located in the north end gable of the barn. He and his wife Frances remembered the date stone and initials T. S., which stood for her ancestor Timothy Schubert, the owner in 1865 when the barn was built. The Manwillers attempted to purchase the date stone from the developer as the barn was being torn down. Unfortunately, the developer refused to sell the date stone.

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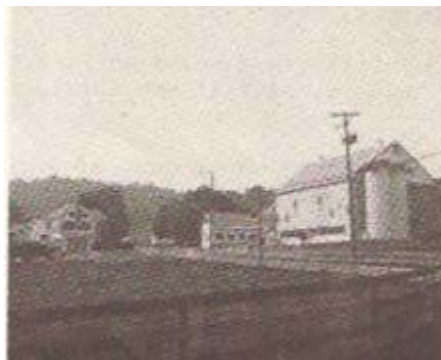
sat upon the stone foundation. The c.1936 photo showed the building unaltered. Sometime between 1936 and 1976 the chicken house was remodeled. The c.1976 photo showed the extended addition built along the south eave wall.

Corn crib/ drive through/ converted to tractor shed

Located just to the northeast of the barn was a timber-framed, wood-sided drive-through wagon/storage shed originally built with flanking eave wall corn cribs. No date is known for its initial construction. Paul Manwiller said that it was used for parking the tractors inside when they were not in use. He said that during his time working on the farm from 1950-1956 only the west side corn crib was intact and the east side crib had been removed. The east corn crib was replaced with an extended side wall that was pushed to the east further out from the original crib wall. The north end of the newer addition was left open. The ends of the original drive through corn crib were closed. The covered interior was used for the tractor shed. Manwiller remembered the west corn crib was the only corn crib extant and that the conversion of the building had occurred prior to his arrival.²⁶

Silos

Standing against the south gable wall of the stone end barn was a pair of wooden silos. Paul Manwiller remembered the two wooden silos. He also remembered Elmer Graber telling him the first of two wooden silos was built in the 1930s which coincided with details shown in historic photos. A c.1936 photo has no silo in the view. A 1938 photo published in the *National Geographic Magazine* showed the first of the two wooden silos in place. A later newsprint photo had both silos in place. A 1974 aerial photo did not show the silos which had already been torn down. According to Paul Manwiller, the two silos were used for storing silage.



Undated newspaper article showing two wood silos on south end of barn

Barnyard stone wall (with braced wooden gate)

Removed with the barn, there was a mortar-laid masonry barnyard wall that was built of field stone between the barn and the road. The top of the wall was slanted and protected by wood shingle coping. The wall started at the chicken house located at the NW corner of the barnyard, ran parallel to the road the length of the barn about 80 feet and made a right-angled turn to the east. The barnyard stone wall then ran about half the distance between the road and the barn. To close the wide gap between the end of the barnyard wall and the barn were two gates used for allowing wagons and animals to pass into larger fields and/or allow access to the road.

²⁶ Manwiller, Paul. Personal communication and aerial photo 5, dated 1974

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8. Statement of Significance

Applicable National Register Criteria

- A. Property is associated with events that have made a significant contribution to the broad patterns of our history.
- B. Property is associated with the lives of persons significant in our past.
- C. Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- D. Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations

- A. Owned by a religious institution or used for religious purposes
- B. Removed from its original location
- C. A birthplace or grave
- D. A cemetery
- E. A reconstructed building, object, or structure
- F. A commemorative property
- G. Less than 50 years old or achieving significance within the past 50 years

Areas of Significance: Architecture, Engineering

Period of Significance: c.1791 - c.1820

Significant Dates: First period - c.1791-1795; Second period - c.1795-1820+/-

Significant Person: N/A

Cultural Affiliation: N/A

Architect/Builder: Unknown

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Statement of Significance Summary

The Schubert-Graber log-post shop is being nominated for statewide significance under Criterion C and D, as it is an important example of the design and engineering methods of the little-studied and inadequately-understood vertical log-post construction. Scant scholarly research has been performed to identify and explain the use of corner posts in log buildings. Corner-post constructions required expert knowledge and skill to cut, fit and erect, unlike their cross-cornered cousins that littered the early settlements. It is likely master framers such as barn builders were the contractors hired to assemble these types of log buildings. Perhaps fewer than one to two hundred vertical log-post constructions throughout the United States have been identified. One of these rare buildings is the Schubert-Graber log shop. Deceptive in its plain and seemingly innocuous appearance, the shop building exhibits a high degree of sophisticated engineering and skill on the part of the lead person who designed and erected the building. While the name of the builder remains buried in unrecorded history, the fact that a master builder was the lead carpenter is easily observed in the layout, joinery and raising of the Schubert-Graber shop's components into one rigid whole. Further study of the shop will continue to provide a better understanding of how these buildings were design engineered, assembled and raised. Ongoing research into log buildings identified eight types of posted constructions throughout the world. Three of the vertical post types have been observed in the United States. All three types have been observed in Pennsylvania, Maryland and the greater mid-Atlantic region, and beyond.²⁷ The Schubert-Graber log-post shop building represents the *Type IV: Log-post Construction*, the rarest of the three types so far identified within the borders of the United States. Type IV buildings lack braces. The sturdiness and durability of an unbraced timber frame/log construction hybrid was achieved through its joinery. Corner-posted buildings of all types were erected from the late 1700s through late 1800s. The Schubert-Graber log shop's period of significance is defined by the shop's construction dates: c.1791-c.1820.

Narrative Statement of Significance

History of the Schubert-Graber Farm

The subject of this nomination was formerly part of the Schubert-Graber family farm, a fine example of the traditional Pennsylvania Dutch farm found in this region.²⁸ It included a four-room cross-cornered log farmhouse originally erected in the third quarter of the 18th century with a multitude of later additions. The farmstead also included a dated 1865 stone-end bank barn converted for dairy use in the early 20th century, the log shop with its garage addition, two wood silos, several chicken coops, a hog house, a corncrib with drive-thru wagon shed later converted to a tractor shed, an out kitchen and at least two privies. The farmstead was complete with running water piped from an uphill spring through a series of clay water pipes that fed continuously flowing water to the main farmhouse and to the barn. The farmstead was split by Powder Valley Road with the house and domestic outbuildings on the west side of the road, and the barn, livestock, and equipment buildings on the east side. The shop and farmhouse are the only two surviving buildings from the Schubert-Graber farmstead.

Lehigh County, where the log shop is located, was first settled around 1730. Lehigh County is bordered along its northern boundary by the Blue Mountain, a ridge of the Appalachian mountain range. The South

²⁷ Pennsylvania is believed to be the hearth region for the log-post construction type, and is where the largest concentrations of the buildings have been identified to date. The currently identified eight typologies may change with the possible discovery of more types in the United States, or worldwide. The author of the nomination is continuing to research these buildings in the United States and across Europe.

²⁸ The picturesque farm was featured in the *National Geographic Magazine* in 1938.

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Mountain ridge cuts through the southern townships of the county where the Schubert-Graber log shop is located. Beginning in the early 1730s, a major immigration of Alemanische (Germanic) peoples from central and southern Europe flowed into Pennsylvania. Many German and Swiss settlers made their way to the Lehigh Valley and established prosperous farms.

The Schubert family's presence in the southeastern region of Pennsylvania began as part of a period of major immigration from Europe to the US that occurred in the first half of the 18th century. David Schubert and his wife Maria Teichman, Schwenkfelders²⁹, made their way from Silesia³⁰ first to Holland and in 1734 on to Philadelphia where they settled in the Germantown area. To David and Maria was born Melchior Schubert in 1747. In 1791 Melchior moved his wife Maria Krauss and their eight children to the farm where, through succeeding generations, the Schubert descendants tilled the same lands for nearly 194 years up to the death of Elmer Graber in 1985. The farm was eventually sold for development purposes in 1992.

Industry existed side by side with farming interests beginning shortly after the settlement of the area. Many villages boasted shops and manufactories such as those of the Powder Valley, where this property is located. During the 1800s Powder Valley hosted oil mills, grist mills and saw mills, the Stahl Pottery, a tobacco factory and, of course, the powder mill for which the valley and road were named. The first powder mill was begun in 1829 by Henry Kemmerer. The mill went through several ownership transfers, blew up on two occasions and eventually ceased operations. Kemmerer, the original owner of the powder mill also owned and operated a general store. He sold his store to Christopher Schubert, a son of Melchior Schubert.

Melchior Schubert's farm passed down through the sons of the Schubert family until Laura, the daughter of Reuben Schubert, married Frank Graber. It was Laura Schubert Graber and Frank Graber who took over the farm in 1924 when her father Reuben passed away. Laura and Frank continued to farm until she died in 1940 and Frank died in 1946 at which time their son Elmer took over the farm. Elmer Graber died in 1985. Following Elmer's death, his wife Mary Long Graber continued living in the house but rented the farm ground to a neighboring farmer who continued to cultivate the fields, but did not use the farm buildings.³¹ In 1992 Mary Graber sold the farm to John Fretz and Associates for a housing development of single-family homes to be called Powder Valley Estates. Fretz demolished all the farm buildings except for the main farmhouse and the small log shop and its garage addition.

According to Bruce Mordaunt, the current president of the Hivel und Dahl Preservation Society (HDPS), in 1992 the HDPS was formed by three or four persons interested in saving the small log-shop building. None of the original founders of the HDPS were Schubert descendants. Bruce Mordaunt is a direct descendant of the Schubert family and later became involved with the preservation society. In 1992 the developer donated to the HDPS the land upon which the log shop stood for the price of \$1. In 2012 the

²⁹ Followers of Kaspar Schwenckfeld von Ossig, a German reformer and contemporary of Martin Luther, began immigrating to the US to escape religious persecution in the 1730s, eventually settling in eastern Berks County and Lehigh County. Kasper Schwenckfeld advanced the cause of the Reformation, encouraged laymen to read the Bible, advocated the separation of church and state, and founded small spiritual communities emphasizing a somewhat mystical interpretation of the Christian faith.

³⁰ A region of central Europe now located mostly in Poland, with small parts in Germany and Czech Republic. Schwenkfelders typically came from southern Silesia and Germany.

³¹ The information concerning the renting of the farm ground after the death of Elmer was provided in an oral interview to Bruce Mordaunt who then provided the information for this nomination.

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boundaries of the first plot of land were adjusted and the land holding was slightly increased to a total of 1.27 acres.

Much of the farm and family information presented here was gained through interviews conducted by the nomination's author with Frances and Paul Manwiller. Frances was the youngest daughter of Elmer Graber and his wife Mary. Elmer was the last direct Schubert descendant to operate the farm as an owner. Mrs. Frances Graber Manwiller was born in the main farmhouse and grew up on the farm. She later returned with her husband Paul to the farm to live and work there with her parents between 1950 and 1956. Neither of the Manwillers ever remembered anyone living in the small log shop across the street since her birth in 1932 or during or since living at the farm through 1956. The Manwillers moved away from the farm in 1956.

On many occasions during the Manwiller interviews, both Paul and Frances used the term "garage" when generally referring to the Schubert-Graber log shop building and its attached garage addition. (The nomination refers to the existing two sections distinctly as either the shop or the garage addition.) Paul said he was inside the garage (meaning the entire building) many times. He well-remembered the entire second floor of the log side of the building being used for storing older, smaller farm equipment and odds and ends. Frances remembered her mother storing potatoes on the first floor of the shop and covering the potatoes with straw to keep them over the winter. Frances also remembered helping her mother in cutting the seed potatoes³² in the first floor room in preparation for planting them in the spring. Both Mr. and Mrs. Manwiller stated the two-bay ground floor garage was used to park two cars.

During one of the interviews conducted with Paul and Frances Graber Manwiller and after a review of several historic photos it was determined the garage addition was constructed sometime between mid-1936 and 1937. Frances (born 1932) maintained it was "always there since I was born." However, a photo dated c.1936 does not show the new garage addition, but instead the smaller and earlier addition that preceded the garage. The hardware on the existing overhead garage doors was traced to a Lancaster Company that was building the doors in the late 1930s.

The Log Shop's Origins and Functions

There is no solid documentary proof of who built the little two-story log shop, or what its original purpose was. Census data and Melchior Schubert's will, which he signed 2 August 1831 only a few months prior to his death that December, listed his occupation as a cooper. There is a strong possibility that Melchior had the log-post shop building erected as a cooperage. On the stair casing wall that leads to the loft there was a large circle scribed using a pair of compass points. The metal points of the compass were lodged in the ends of wooden handles and the tool was used in making large circles for laying out wheels, barrel bottoms, lids and many other items. Perhaps during Melchior's life, and certainly following his death, the building served various purposes. Family histories have stated that the building once served as a house, though physical evidence does not suggest that the building ever served as a long-term residence, as for example there is no evidence of a cooking hearth.

When the Melchior Schubert family moved to the farm, they probably occupied the standing four room log house on the west side of the road, opposite the nominated shop building. Melchior was a cooper, and the physical evidence supports the idea that Melchior had the log-post shop building erected shortly after he arrived on the property. A comparison of the physical evidence contained in the main farmhouse

³² A sizeable area of Lehigh County became known for potato production, and special buildings were designated for potato storage. The stone ground level of the shop building, banked slightly into the hillside, would have fit that purpose nicely.

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across the road and the log shop itself suggests that the shop served primarily as a warm weather workshop and not as a house. There is no evidence of a hearth or any source of heat except for the small stove pipe hole in the ceiling for a temporary wood stove used for a short time in the 19th century. There are no internal stairs connecting the first and second stories, no finished doors were ever hung in the doorways of the second floor to loft stairs, and the level of finish in and on the log walls is more appropriate for a tradesman's shop or use with agricultural purposes than a permanent residence. The log shop building also contains evidence of a pre-existing building on this same site. Portions of the existing first floor stone walls were actually built for an earlier building. The second floor walls were built using the salvaged logs from the first period building. It is possible that the earlier building was used as an early residence, and that the later (existing) shop building was used occasionally as a home when extended family needed it.

In a 1993 letter written by Kathryn Miller (great-great-grand-daughter of Christopher Schubert, a son of Melchior) she states "*Melchior Schubert built a log house down at the foot of this hill where my great-grandfather Timothy was born.*" Miller's handwritten history referred to the house location as "*at the foot of the hill,*" which matches the location where the current log-post shop building stands on the east side of Powder Valley Road.³³

The 1820 US Census listed Christopher Schubert as a farmer. On August 14, 1820, a son named Timothy Schubert was born to Christopher. In a second written family history, Timothy's grandson Charles Paul Schubert (b. 1909) wrote "*I am positive that my Grandfather Timothy was born there.*"³⁴ ("*There*" refers to the log building on the east side of Powder Valley Road where the log shop now stands.) If Christopher was helping his father Melchior with the farm (or acting as the primary farmer), his young family was likely living with his parents (and some siblings) in the dwelling house, or in a second residence on the property. (Christopher and his wife had three children older than Timothy.)

In the same letter, Charles Paul described the area east of the Upper Milford Salem United Methodist Church located uphill from the Schubert farm as where Uncle William Schubert's farm was located. Charles Paul further wrote that "*Driving down the hill past Uncle William's farm and around the curve was Uncle Reuben's farm. The dwelling house was on the south³⁵ side of the road and the log house and barn were across the road.*"³⁶ Charles Paul clearly called out the existence of the dwelling house, the main farm house which he correctly identified as built of logs, and differentiated it from the smaller log building—the current shop, or its predecessor building—which was on the opposite side of the road, with the barn. The dwelling house was a more-substantial building, and part of a cluster of domestic resources. The log house (shop) was part of the agricultural work zone across the road that included the barn. He continued to reference both buildings as "houses."

A great-granddaughter of Timothy Schubert was Marguerite Schubert O'Brien. She stated in her c.1993 family history³⁷ that Timothy, born 1820 and died 1876, lived in the Schubert-Graber log house. It was at this point in the story lacked solid facts and became murky. O'Brien did not clearly state the location of

³³ Miller, Kathryn. Untitled family history, handwritten in 1993, three pages. The Miller letter and other family letters are all in the possession of the HDPS and more specifically in the care of President Bruce Mordaunt.

³⁴ Schubert, Charles Paul. Untitled family history, 28 January 1993. 2 pages. T.S

³⁵ In some places the "south" side of the road is referenced as the west side, and the north side as the east. This is due to the angled direction of the road.

³⁶ Ibid

³⁷ O'Brien, Marguerite Schubert, Untitled family history, undated, but known to be written in 1993 when all the rest of the family histories were written.

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the Schubert log house she mentioned in her history as her other family members did in their letters—did she mean the larger farmhouse, the dwelling house, or the smaller log building known today as the log shop? Or even the earlier building that was rebuilt into the existing log shop? However, the consistency of the recollections through the hand-me-down family histories as related by earlier family members was very strong. Different branch members of the Schubert family all basically said the same story. Timothy Schubert was born in a log house located on the north (or east) side of Powder Valley Road. Due to the fog of history, they all assumed it was the existing shop building.

In order to verify the major claim in the family histories that Timothy was born in the little log house on the east side of Powder Valley Road, a review of the farmhouse across the road and other records was undertaken. Genealogical records did verify Timothy Schubert was born in August 1820. Physical evidence in the main farmhouse on the east side of the road indicated there was a major renovation performed in the first quarter of the 19th century and it could have been underway about the time Timothy was born in 1820. A review of the farmhouse confirmed the renovations engaged the entirety of the first and second floors. The original interior of the log farm house was basically gutted. The first period staircase was removed from the northeast corner and a new straight run staircase was built in the center of the house located a few feet west of the front door. The renovations included the removal of the first period small windows and the inclusion of enlarged windows. The floor plan retained two rooms on each floor, but the relocation of the staircase allowed private access to each room from the new center hall and stairs whereas before one room had to be walked through to access the other room on both floors. The renovations included the plastering of the interior and in general made better, more efficient use of the second floor bedroom space.

The evidence of the upgrade is fairly conclusive. The patched flooring on the first and second floors reveals where the original stairs were located. The original windows were smaller in size being six light over three light plain sash as discerned from the remaining shorter jambs left in place in the walls. Photos of the 1984 renovations captured views of the interior log walls with the shorter jambs in place. The logs below the original window openings were cut to accommodate larger longer windows. At the time of the log farmhouse visit there was on the second floor a flush, flat, six panel door distinctive in its design and used only in the first quarter of the 19th century.

Given the dates of Timothy's birth and the belief the renovations could have been on-going in 1820, it is possible Christopher Schubert could have made temporary use of his father's Melchior cooperage shop across the street where he and his pregnant wife Maria (née Yeakel) may have set up housekeeping during the extensive renovations to the larger farmhouse across the road c.1820. The evidence the main farmhouse was renovated around the time Timothy was born is extensive. There is a flush panel door on the second floor of the farmhouse that dates to as late as 1820. The hinges, screws and jambs for that door indicate it is original to the renovations and the location where it now exists. During the time of the renovations, Christopher Schubert was listed as the farmer of the property on the local tax rolls. He would have presumably then been in control of the farm, and the log farmhouse renovations and all the other buildings during the time when his fourth child Timothy was born on 14 August 1820. Unfortunately this scenario may conflict with Melchior's potential use of his cooper shop. Melchior was 73 when his grandson Timothy was born. While Christopher was listed as the farmer and had control of the property, Melchior did not pass away until 1831 at the age of 84. Melchior probably had his son's respect and retained some say in what happened to his shop and the main farmhouse. Was Melchoir still working in his cooper shop in 1820? Where did he stay during the renovations? There is no conclusive proof to verify the accuracy of the family letters. But if the scenario laid out above is correct, the letter histories written

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by various members of the Schubert family would be validated in their collective memories that Timothy was born in the log shop across the street from the main farmhouse. However, if Melchior was still working as a cooper, it is unlikely the small shop was ever used as a house.

Notwithstanding either possibility, plenty of physical evidence indicates the existing shop on the east side of the road, described as the little log "house" by later family members, was not built as a permanent house and was never fully converted into a house at any point in its history. If the small log building, the shop, was where Timothy was born, then it was in service for a short period of time as a temporary residence while the renovations to the larger log house across the road were underway. Unfortunately, short of finding a letter from a family member to someone of that time period clearly stating Timothy was born in the cooper's shop, it is not likely we will ever know the facts of the situation. There are too many missing pieces to the story. Further study of the building(s) may shed more light, but it is likely impossible to find definitive proof.

Building Evolution

Physical evidence indicates there were at least two buildings existing or built almost immediately when Melchior Schubert purchased and moved his family to the farm. The two buildings consisted of the main dwelling farmhouse and small log building that evolved into the present-day shop. Other buildings or structures were also likely part of the farmstead, or added soon after, but there is no record of what they were.

The main farmhouse was a modest two story, two room over two room cross-cornered log house, with a walk-out basement and walk-up attic located on the west side of Powder Valley Road.³⁸ The log walls were joined at the corners with V notching. The house was three bays, with a window-door-window configuration, and double-hung plain sash. The second floor had three windows in a row one over each of the first floor openings. Each window consisted of six light sash over three light sash. The main front door of the farmhouse was a simple heavy raised six panel door with a vertical thin board layer nailed on the interior side for extra strength. The door was hung with strap hinges and secured by a handmade door bolt. The first period farmhouse was built using handmade nails, the bottom side edges of the exposed second floor joists were chamfered and the bottom sides of the second floor flooring was planed and beaded and also exposed to the first floor. The interior of the log walls were whitewashed. The exterior was also exposed logs and whitewashed.

The second building on the property believed to exist when Melchior Schubert purchased the farm was located on the east side of the Powder Valley Road. It occupied the site of the current second period log-post shop. The building that predates the current shop building was, like the existing shop building, tucked or banked into the hill creating two level access. The first floor was formed by a masonry stone wall system. The 30" deep stone wall against the hill was unusually thick, designed to buttress the weight of the earth against it. There was at least one door opening in the south wall. The second floor was built of cross-cornered logs that had the same V notch used in the main farmhouse across the road. The pitch or angle of the top of the V notch was the same on both buildings. The reused logs in the current building show signs of at least two openings, both probably windows. Two of the reused logs have the pockets cut into their sides indicating an integral joist floor connection to the logs. Since the building on the east side

³⁸ Details of the original first period farmhouse were discerned from written family histories, photographs made available of the farmhouse's 1984 renovations, and an inspection of the farmhouse allowed by Mrs. Cichocki, one of the two owners of the log farmhouse.

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was demolished and rebuilt, little more than what has been stated is known about its construction details and nothing has been learned of its use, to date.

The dates for the two buildings were estimated by the nails and construction features. The dates for the main farmhouse were partially gleaned from 1984 photographs taken during the renovations performed by the current owners as well as a physical inspection of the building. While some new logs were used in the existing second period shop building, the first period wall logs were salvaged and reused in the second period shop. Some of the first period building logs had their former exterior surfaces turned to the interior when reused in the current shop building. The slightly weathered faces of those logs turned inside suggests at least two decades of weather exposure and possibly 30 or more years of exposure to the weather. Also on one reused log there is one remaining V notch on one end. That single surviving V notch matched the V notching observed in the farmhouse across the street. The two logs showing the mortises for receiving floor joists suggests an early technique of floor joist construction in the southeast Pennsylvania area where joists were connected directly to the exterior wall sill logs. Most first floor log joists were independent of the log walls laid directly on the interior edges of heavy stone foundations. Based on all these factors, it is possible the two existing buildings were constructed in third quarter of the 18th century possibly between 1760 and the 1770s. The surviving front door reused in the basement is definitely not an initial construction door, but a finishing period door added after the "green" log house had dried and settled into its permanent position.

In 1791 Melchior, his wife Maria and their eight children moved (likely) into the existing four room log farmhouse. He would then presumably turn his attention to improving the farm to sustain his family and provide a shop for his cooperage business. One of his early considerations was likely the construction of his cooper shop. It appears he had the existing first period building on the east side of the road torn down, carefully salvaging approximately 46% of the former building's first story stone walls and all the second story wall logs. He expanded the existing footprint of the first building by extending the east bank wall 8'-3" to the north and by widening the building in its depth by roughly 3'-0" +/- relative to the earlier building's footprint. The first period building measured 17'-7" wide by approximately 15' - 2" wide. The second period existing shop building measures 18'-7" wide by 25'-10" long. Melchior engaged a master builder to build his new shop. The builder had to be able to design, layout, cut and erect the existing timber frame using four new corner posts, four new door posts, all new sills and top plates and six new long logs that spanned the full length of the west and north walls. The builder also had to make all new joists and rafters since the new building was longer and wider than the first period building. The building was made large enough for Melchior's intended cooper shop. Melchior and his builder apparently gave careful consideration to the reuse of the former wall logs. The new building was sized to allow maximum reuse of the former building's logs. This was made possible by cleverly-placed door and window openings in the second period shop that allowed the majority of the old logs to be used in the new building.

The date range for the initial construction of the current shop building was established by two items. The first fact was provided by the deeds and tax records. The deed is dated 1791 and tax records confirm Melchior moved to the farm in 1791. The second set of clues was discerned from the remaining physical architectural evidence providing enough evidence that both buildings were on the property before Melchior Schubert moved to the farm. The initial construction of Melchior Schubert's cooper shop can be dated to the late 18th century. Handmade nails were still the exclusive fastener for nailing in 1791. It was not until 1793 the first patent was made for a nail making machine. The first patent was for a tack machine, but the patented tack making machines could also make small nails and brads. However, the first machines had a lot of problems with gripping the cut shanks of the nails and stamping the heads. The

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improvements that corrected the problems with nail making machines were not patented until 1811 with the final improvements patented in 1820. With the defects corrected in nail making machines, the nail making industry skyrocketed and most nails after 1811 became the cheaper square cut and stamped head one operation nails simply known as standard cut nails.

Between 1793 and 1811, and on to 1820 when the last big improvements were made to nail making machines, builders were usually employing nails with sheared shanks cut by the machines and hand hammered narrow heads made by blacksmiths. This hybrid nail type is very distinctive and widely used since even though they were two operation nails employing both machines and handwork, it was still faster and cheaper to make the hybrid nail than continue to use all handmade nails. No hybrid nails were found in either the extensively reviewed shop building or the briefly reviewed main farmhouse.

Handmade nails were exclusively used only in the initial construction of the shop. While the wall logs needed only wooden pegs, nails were required for boarding the floors, installing the studs and siding on both gables and the roof framing system where the shingle lath for the roofing was nailed to the rafters. The cooper shop was intended for the second floor as evidenced by the large double doors, plenty of windows and the south gable man door to light the interior. The use of the first floor remains unknown but was best suited for food storage during the winter months.

Study suggests Melchior used the rebuilt shop building at least up through c.1811 in an unfinished state. After the log walls were raised and the interior closed with gable siding, roofing and daubing, with a door installed for access, Melchior was able to use the space in its unfinished condition for his shop. The shop remained unimproved without stairs to the loft, baseboards, chair rails and finished windows and larger doors until after the log walls had finished settling into their final dried and cured state. The interior was initially finished with whitewash and it is more than likely the exterior was also whitewashed. The finishing stage of construction must have waited until after the nail making machines had been improved. There are no hybrid nails in the building. The stairs, chair rails, baseboards and other finishes were all installed using standard cut nails all formed in improved one operation nail making machines. The finish-period nails all date to or after 1811. The final finish to the interior was the application of nailed-in-place split plaster lath and the application of plaster to the interior first and second floors. The plaster lath nails were also produced in a post 1811 machine. For reasons that remain unknown, the finishing phase of construction was never fully executed. The date range for the initial construction period was estimated between 1792 and 1798, or c.1795. The finishing period when the trims, stairs and plaster were applied would fall between c.1811-1820 +/- . The full date range for the shop building, encompassing initial and finishing constructions, is c.1795-c.1820.

The problem of terminology becomes acute when the existing log shop building is examined. Based on the current understanding of the shop building, it is clear the shop was never intended to be a house. As described in the physical description above, there were many features missing that would be expected for a permanent dwelling. Missing features include the lack of a permanent masonry or metal heating and cooking source, finished doors in the stairwell, doorways leading to the loft, and a lack of internal communication (stairs or even a ladder) between the first and second floors. The finished trims, common for a shop, were rarely painted. A finished house, even one of low means, would have been coated with layers of whitewash if the owners could not afford the higher priced paints. The small shop building had a large pair of framed wagon doors and only one Dutch style two leaf man door to enter the building on the second floor. The large doors would not have been well-suited to retain heat had there been a heating source. The two-leafed Dutch door was not typical of the region for a house door, especially with one

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room. Dutch doors were more typically relegated to use as animal stall doors on the lower levels of barns. Of great importance was the lack of daubing on the interior side of the shop walls. The south wall now covered by the garage addition still had interior lath and plaster behind which no daubing was observed on the interior side of the log wall. There is no evidence that indicates the existing building was ever meant to be a house or was ever used as a house other than for a possible temporary location, perhaps while remodeling was being performed on the main farmhouse across the road.

Research and Terminology³⁹

There are three important terminology issues along with a few term definitions that need to be clarified to better understand the narrative concerning the Schubert-Graber log-post shop. The first concerns the use of the terms *log* versus *plank*. The second is how *corner-posted* log buildings are referenced. The third defines the difference between *initial log construction* and *finished log construction*. Following these three major term clarifications, there are a few more minor, but none-the-less important, term definitions used in this narrative are either defined below or in footnotes where appropriate.

Log versus Plank

There are many instances where experienced tradesmen and scholars all over the world have established a variety of terms to describe the same item, type, or construction process. An example of this applies to the main component of a log wall—the log itself. Most authors who have written books and papers describing log cribs refer to the main components of the walls as *logs*. While most people never give second thought to the appropriateness of calling a log a log, there are a few who think it better to call a log a "plank" when it is flattened at least on two opposing sides whether by hand or sawmill. Those individuals who call logs *planks* regardless of size, shape or manufacturing process only confuse the issue of which term is appropriate. Today in the early 21st century, most, if not all, master carpenters who still practice the traditional craft of log building construction or restoration whether here in North America or in Europe call a log a *log*.⁴⁰

Consider the 19th century definitions of the terms *board*, *plank* and *log*. To clarify a rather confused situation and for purposes of reference within this narrative, the terms *board*, *plank*, and *log* shall be defined as used by the normally accepted measurements of thickness for each wooden component. Using the 1851 edition of Noah Webster's *American Dictionary*, a piece of lumber of up to 1-1/4" thick is a *board*. A stick of wood measuring from 1-1/2" to 3-1/2" is defined as a *plank*. Webster did make a side note that on rare occasions a 4" thick piece of lumber was sometimes called a plank. However, a piece of lumber at 4" thick and thicker is usually referred to as a *log* by most crafts/tradesmen and scholars.⁴¹ In keeping with the contemporary and historic references to measurements that define appropriate use of terms for *boards*, *planks* and *logs*, the large wooden components that make up the Schubert-Graber shop walls are referenced in this narrative as *logs* and not *planks*.

³⁹ The author's personal research concerning traditional log building constructions all over Europe and North America informs the Schubert-Graber log-post shop nomination. Reed has concentrated on Europe over the past ten years. Since 1972 Reed has been studying North American log structures. The research expands on existing vernacular log and timber-frame scholarship and research available in the US. To the extent English translations are available European scholarship has been reviewed as well. Dozens of exposed mid-Atlantic log-post structures have been carefully examined. A lengthy paper being prepared by Reed focuses on new understandings concerning the corner-posted log construction traditions. There are references within this nomination to this author's unpublished personal research concerning log-post buildings.

⁴⁰ Of the dozens of log building contractors and restorers interviewed here in the US, Canada, and Europe all refer to a horizontal wall member as a "log." The American tradesmen did not call a wooden timber hewn on two opposing sides of 5" or 6" thick a plank.

⁴¹ Webster, Noah. *An American Dictionary of the English Language*. George and Charles Merriam publishers, Springfield, Mass, 1851, pg. 833.

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Corner-posted versus log-post

The second term needing discussion has to do with whether to call a horizontal log building with vertical post corners a *corner-posted* or a *log-post* building. There have been no known historic terms discovered to date referring to log buildings with vertical wooden corners. *Corner-posted* is a relatively recent late 20th century term. *Log-posted* is an historic term referring to a particular type of corner-posted log building. While some may think these terms are essentially interchangeable, research to date has identified eight different subtypes of vertically posted log buildings. There needs to be terminology to generally reference the main group of *corner-posted* structures and specific terms for each subtype.

Continuing research has accepted the term *corner-posted* popularized by Nancy Shedd⁴² as a general reference to all vertical corner-posted constructions regardless of subtype. Though the term may have earlier precedents, it was Nancy Shedd's pioneering research during the late 1970s that established the use of the term "corner-posted" as a conventional reference for log buildings with corner posts within the North American community. This occurred for good reason. Few people have studied in great depth the vertical post and horizontal log building method in the Western Hemisphere. However, while Shedd's term is legitimate and appropriate, her use of the term to describe a building type in the United States lacked the benefit of extensive research about the earlier prototypes that exist throughout Europe. To be sure she most certainly performed meaningful research concerning posted log buildings in the United States. Her work references the well-known French vertical wall log buildings. Because Shedd's husband spoke French fluently she was able to correct the inaccuracies Henry Glassie introduced through his misunderstanding of the French language terminology. Shedd's pioneering study of the corner-posted log building provided a platform upon which a great deal more research concerning the corner-posted log buildings not only in the United States, but across the European Continent as well has been performed. The terms for the eight subtypes of corner-posted structures identified to date are more difficult to define. Historic references have been located for two or three of the identified subtypes, but not all. New terms have been established for those subtypes that have not been named or for which no established or historic term has been discovered for a particular subtype.

The Anglicized term *log-post* is a literal translation from the historic German word *Blockständerbau*. Within this narrative the use of the term *log-post* refers to log walls with a minimum of two posts, one at each end of a wall panel. Between the two posts, a series of horizontal logs are placed one on top of another. In Europe the horizontal logs are scribed and tightly placed one on another. In the United States, the logs are usually separated by several inches and the interstices between the logs filled with chinking and daubing. Tenons are cut into the log ends that fit into the vertical end-post mortises.

⁴² In the late 1970s Nancy Shedd of Huntington County, PA, performed a survey for the US Army Corps of Engineers of standing cultural resources in the area that was eventually flooded to create Raystown Lake. The Corps hired her to record all the buildings and other cultural resources that were in the area to be inundated. There were many log resources standing in the proposed lake zone. Among those remaining buildings she identified numerous log-post houses and out-buildings. Curious about this unusual type of log building, in the 1980s she received a small grant from the Early American Industries Association to study them. She began to gather information on a statewide basis and even further afield concerning these log-post buildings. By 1986, Shedd listed 32 of Pennsylvania's counties as having log-post constructions, totaling around 105 buildings. These corner post buildings were all timber framed structures built of large wooden members with horizontal log infill used to form the walls. The reason all of these structures were known to exist is because they were stripped of their protective sidings and left exposed to the weather. Shedd was able to locate corner posted buildings as far north as Monroe, Columbia, and Clinton Counties and as far west as Somerset and Indiana Counties. Shedd wrote a short paper in which she described what she termed corner-posted log buildings. Her pioneering research was never continued except through small local efforts to better understand individual houses such as the recent National Register listing of the Marcus Hook Plank House in Delaware County, PA.

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Another historic European term first heard in Poland in 2016 during a visit to the Sanok Skansen Open Air Museum was *post and panel* log construction; *log-post*, *post and panel* and America's contribution to the terminology *corner-posted* log construction all basically refer to the same construction type. The log-post buildings can be found in several central European countries and also in Pennsylvania.⁴³ *Post and panel* refers to the same series of horizontally-stacked logs that fit into two flanking posts with mortises to receive the tenoned logs, making a panel. In either use of the term, they refer to the same type of posted log construction that has no bracing, no notched corners and no posts standing outside the crib such as observed in side-posted log constructions observed thus far in Poland and Czech Republic. Both *log-post* and *post and panel* terms when referring to corner-posted horizontal log buildings without braces are appropriate. For the purposes of this nomination the term "log-post" shall be exclusively used when discussing a single panel construction such as the Schubert-Graber log-post shop. When panels are joined in a long series of post and panel constructions, the term "post and panel" will be used. When a general discussion concerning corner posts used in log wall constructions, the term "corner posted" will be used.

It is imperative to keep in mind that the origin of terms can be difficult to trace. In many cases various terms may refer to the same item even from an historical point of view. Take for instance the wooden shingle most commonly used throughout American roofing history up until the final quarter of the 19th century. The shingle is seen in numerous historic photos taken from the early ambrotype up though the images dating to the Civil War and well into the 20th century. Long narrow wooden staves shaved smooth with tapers from side to side and from a thick butt end to a tapered thin tail, these historic shingles were variously known as *feather edged*, *long*, *double beveled*, *side lap and lap* shingles. All these names referring to the same shingle type can be found in historic literature dating thru the 18th and 19th centuries. Which name is correct? All of them are correct. Terms are what you make of them. The term selections herein are based on the oldest and most common uses of period terms as are possible to find and verify.

Two Phases: Initial Log Construction versus Finished log Construction

The third terminology defines the two events necessary to complete a log crib building. The building of a completely finished log structure was often separated by years between the initial construction and the finishing of the log structure.

Almost all newly built log buildings were erected using logs from freshly cut trees. The trees were usually in a state of what is known as "green." Green means the trees were still wet, containing moisture within the wood. Green logs cut from the felled trees were far easier to hewn and form into whatever shape was needed than dry logs. Farmers and builders felled the trees, shaped them to the required sizes for wall logs, joists, summer beams, rafters, etc. The logs were dragged to the building site and raised into a crib of four log walls. Given that trees can shrink across their widths at up to 1/2" per foot and the logs were laid up horizontally there was the certainty the log house would shrink some inches in height. A one story eight foot tall wall would shrink up to four inches. If a new green log two story house was built, up to eight inches of shrinkage could occur. The use of the green log structure was limited in its first few years to the exterior wall and small openings cut into the walls for a door or two and a few small slider window panels. The log cribs were raised with their joists and floors laid in place and the rafters, roofing and

⁴³ Reed, Douglass. Personal research. Type 4: Log-Post Constructions have been studied in Latvia, Poland, Czech Republic, and Germany to name a few of many countries where they have been observed. There were other log-post constructions observed in Lehigh County, notably the Trexlertown 1760 Pub and a stone first floor with log-post second floor dwelling farmhouse near Shimerville. Several log-post constructions have been observed in Dauphin, Centre, and Union Counties, PA. Refer to the list of identified types of vertical post buildings found in following pages.

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gable siding installed. The logs were chinked and daubed. Except for white washing, no other interior coatings, finishing trims, finished doors, windows or internal walls were built. Any vertical features such as chimneys built on the interior of the wall, staircases, partitions or large doors and windows would impede the shrinkage of the walls causing severe bows to the flooring and wracking to the building overall. An old farmer's tale was fresh cut boards would take up to one year per inch of thickness to dry. With personal experience gained from working on hundreds of existing and dozens of new log structures, a five to six inch thick log would take four to five years to finish the drying and settling into its permanent position. Experienced traditional log house builders use a 3% to 4% shrinkage factor when they design and build their new log buildings. Only an inexperienced log house builder finished the log crib into whatever was envisioned for the final appearance before allowing the green log walls to dry and settle.

Once the log shell was deemed to be dry and settled into its final position, loose daubing was patched to tighten up the walls. The final, usually larger-sized front and back door and window openings were cut into the walls. The log ends intersecting the opening were secured with vertical rough jambs and pegs. Interior partitions, and stone or brick chimneys were built to replace the first "cob" chimney set to the exterior of the wall. Finished staircases and all the trims and casings were installed. Plaster lath was applied and the final act was to plaster the walls and ceilings and complete whatever other tasks were planned for the building. The period between initial construction and finish construction was at least the time needed to allow the building to dry. Often the time span between the two construction phases was much longer. It took time to establish a farm and in many cases log houses often went twenty years or longer between initial construction and finish construction due to balancing priorities and a number of exigencies, including the financial ability to pay for the finishing.

Crib is a term that defines a horizontal log building. This nomination does not use the common word *pen* often used in modern literature written about America's log buildings. Webster's Dictionary of 1851 defines a crib as a small habitation or cottage.⁴⁴ Webster defined pen as an enclosure for animals. The term "crib" can often be seen with reference to *cross cornered* or *notched* crib construction. Both refer to the ends of the logs as notched with one of the nine known notch types used in the United States or one of the 53 known notches identified to date that have been used over the surface of the world.

Analysis of the Shop

The physical evidence of the existing log shop points to an initial construction date in the last decade of the 18th century. The finishing construction date could be as late as the second decade of the 19th century. Unfortunately, due to the severe weathering of the logs dendrochronology is an unlikely candidate as a dating method for the shop building. However, physical evidence clearly indicates the first period, original log building was torn down, the logs from that building were salvaged for re-use, the former stone foundation was enlarged, and a new log cooper's shop was built using the former logs for the new horizontal wall infill between the new second period vertical posts.

Technology in the form of existing components and nails tend to indicate an *initial* construction date for the existing second period shop of 1792-1798, or circa c.1795 plus or minus one or two years. Again, based on physical evidence, the date range for the finishing phase of the shop building which included the staircase, trims and plaster would be no later than 1820 and likely a few years earlier. The *initial* construction date of c.1795 is largely based on the use of handmade nails, the details of construction of the gable wall siding, the application of the roof lath overhang and the small barges cut around each extended roof lath that went past the edge of the rafters. Handmade nails were observed in the first floor

⁴⁴ Webster, American Dictionary, 1851, page 283.

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flooring, roof framing construction, gable end sheathing, barges and loft flooring. On the other end of the construction a few years after the initial erection and definitely after the building had finished drying and settling into its permanent position, the earliest possible date for the *finish phase* of construction is also largely based on the absence of a particular type of nail made only for a short period of time between 1793 and about 1811. Nails between those years were more likely made half by machine and half by hand. The nail machines cut the shanks and the heads were formed by hand work on an anvil. Final improvements to nail making machines allowing the nails to be made in one pass through the machines were not available until 1811 when the final patent was made for improvements rendering the machine able to make the entire nail. Most of the nails pulled from within the log shop were the type made after the final improvements were patented for nail making machines. The finishing nails within the shop were clearly cut nails with sheared shanks and stamped heads dating after 1811.

Other features considered in dating the existing second period shop's initial construction to c.1795 include the exposed loft joist ends that held the rafter seats. The exposed joist ends overhung both eave walls by 16". Typically exposed rafter tails and joist ends were usually covered with boxing by 1825. Another feature was the use of marriage marks by timber framers.

Marriage marks were used to identify log pairings or units during assembly and raising of walls carried well into the 19th century. Marriage marks indicate the logs were laid out and cut using the scribe rule method. A newer more rapid method of layout and construction for timber framers was known as square rule construction which standardized units of construction. For instance, when using square rule construction, all braces were exactly the same; all posts were exactly the same. Parts could be interchanged throughout the building and fit in similar locations. There was no need for marriage marks with square rule timber frame construction.

The earliest known reference to square rule framing is dated to a 1786 newspaper article published in a small town in New Hampshire. Square rule generally took over scribe rule construction, which lasted to sometime in the 19th century. When scribe rule was dropped as a layout method is unknown. The initial construction of the late 18th century shop building used heavy posts for the door openings. Later constructions used much smaller thicknesses for door and window jambs (not posts). The log shop's heavy door posts used for the east and south wall door openings had largely passed from typical practices by the first quarter of the 19th century. Another construction technique used in the existing shop building exhibits turn of the 19th century practices. The second floor's interior plaster base coat used straw as a binder, which was a common 18th century practice. Straw entrained clay base coat daubing material drifted into the 19th century, but generally ended altogether by the end of the 1820s if not sooner.

The Log-Post Type and Its Relevance to the Schubert Shop

Initiated in 2007, a focused and continuing research effort on the use of posts in log wall construction has identified two basic types: corner-posted and braced frame.⁴⁵ The major difference between the two is whether a posted log building has braces or not. If there are no braces in the log walls, the building is generally referred to as a corner-post type. Those that do have braces present in the log wall construction are referenced as braced frame log buildings. Of the known and exposed corner-posted log buildings in the Mid-Atlantic region, there are more braced frame log buildings than corner-posted log buildings

⁴⁵ A corner post is a vertical wooden member located in a corner of a building and sometimes found in intermediate wall locations. The posts run from a sill on the foundation to the top plate just under the roof eave. A brace is a diagonally set wooden member usually of a smaller dimension than a corner post that attaches to a right angle formed by a post and sill or a post and a tie beam or top plate. The braces hold a frame firm against the pressures of a high wind.

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lacking braces. However, there is no way to know what lurks beneath the layers of siding that cover thousands of log buildings across Pennsylvania, Maryland and West Virginia. Only through the stripping of any building of its siding, the demolition of a building, or somehow exposing vertical post structural elements such as those of the Schubert-Graber shop can any type of corner posted buildings be studied.

With the exception of Nancy Shedd's pioneering report in 1986, very little in the way of research concerning the corner-posted log building type has been undertaken. Nothing has been written of its technology, nothing is known of how these building variants were erected and nothing is known of how competent the builder needed to be to engineer a framing design, layout, and cut a frame of four log walls and raise it square and plumb. There are few references in known works by authors such as Bealer, Brumbaugh, Erixon, Hutslar, Jordan, Phleps, Rempel and others that have any factual background from exhaustive research on the subject of corner-posted log buildings of any type or variation. Unfortunately, most of these and many other authors had little useful knowledge of these buildings. Most of the prior claims accorded the corner-posted buildings are in need of revision and expansion.

The author became aware of corner-posted log construction as early as 1978 in Sharpsburg, Maryland, where approximately twenty corner posted log buildings exist. Since then the author has studied posted log buildings anywhere they were found in the Mid-Atlantic States, all over North America, and across Continental Europe. Eight different types of vertical post usage in log wall constructions have been identified. Research has been concentrated in North America and Europe. When expanded to a worldwide review more types may be found. Not all the typologies observed in Europe have been observed or reported within the United States to date.

Corner-posted Typologies (*identified to date*)

1. Standard Opening Posts and Jambs
2. Notched Corner with Intermediate Log-Post Construction
3. Notched Corner w/Braced Intermediate Log-Post Construction
4. Log-Post Construction (single panel)
5. Post and Panel Construction (multiple panels)
6. Braced Frame - Log Construction
7. Side Post Log Construction
8. Hybrid Post, Panel and Cribbed Log Construction

Common Locations

Every building, everywhere
Lithuania, Poland, Romania
Chorzow, Poland (Silesia)
US, Romania
Latvia, Estonia
US, Romania, Poland
Silesia (southern Poland)
Romania

The Schubert-Graber log-post shop exhibits two types of vertical post construction: *Type 1: Standard Opening Posts and Jambs* and *Type 4: Log-Post Construction (single panel)*.

Type 1: Standard Opening Posts and Jambs can be found in virtually every log building anywhere in the world. If a log building has a door or a window, the opening almost always has a vertical post or jamb on either side to hold the ends of the logs intersecting the door or window in place.⁴⁶ The Schubert-Graber shop Type 1 door posts are in the form of four heavy vertical door posts that frame the pair of wagon

⁴⁶ An opening cut into a solid horizontal log wall must be stabilized with a vertical piece of wood to keep the logs in place. The obvious items such as door and window openings require vertical posts or jambs. Firebacks, vents, flue thimbles, other exit openings also needed posts or jambs to stiffen and hold the wall components together. In early constructions up through the first quarter of the 19th century, heavy wood posts were used to fix the horizontal logs plumb. The earlier stout jambs were actually known as door posts, window posts, etc. In later constructions the posts were eventually reduced in thickness to thin split, hewn or sawn boards known as jambs. There are exceptions. In Swiss, German and Austrian barns (there are likely other countries as well), openings have been stabilized in place without jambs or posts. As the logs were raised, stout vertical pegs were drilled into the logs to hold them in place.

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doors in the rear, east wall and single man door in the south wall. The east wall's Type 1 wagon door posts measure 5" x 6" at the north side of the opening and 4" x 6" at the south side. There is likely no reason for the differences in the door post sizes—the builder simply used what material was on hand. The south gable's Type 1 man door posts also measure 5" x 6". The top ends of the four door posts are tenoned up into mortises cut into the underside of the top plates. The mortise and tenon joints are pegged to hold them in place. The bottoms of the wagon door posts are partially missing and the east wall sill ends are damaged. The connection between the wagon door posts and the east wall sill is missing. The south gable man door post to sill connections are via tenons into sill mortises. The door post to sill joints were pegged the same as the top post tenons. The four door posts were made from new timber stock for use in the current building. The door posts required a great deal of cutting and shaping needed to form the posts with their many connections and green stock would have been used for the door posts. The window openings are framed with 2-1/4" thick jambs. There are no other openings framed into the log walls.

The presence of the **Type 4: Log-Post Construction** method makes the Schubert-Graber log-post shop worth further study. The shop's vertical corner posts lack braces, which places the building in the *Type 4: Log-Post Construction* category. The corner posts are the important feature that makes the existing second period Schubert-Graber shop different from the first period log crib building that was previously on site. Instead of notched crib⁴⁷ construction, the corners of the existing log walls were formed with large vertical posts. The individual horizontal wall logs had tenoned ends that fit into mortises cut into the posts. All but two sides of the four wall posts and the four door posts were cut with a series of vertically-oriented individual mortises. Two of the post sides had continuous trench mortises. The ends of the horizontal logs were shaped with tenons that fit into the mortises.

There are four Type 4 corner posts in the shop building; one post was used in each of the four corners forming the corner of each wall juncture. The four posts are all constructed with the same design. The eave sill ends are formed in a dovetail captured by the gable sills and the posts. The back side of the posts each have a stub tenon mortised into gable sill. The stub tenon helps to keep the post from twisting. Each of the corner post tops are locked in place with an offset cog and pegged mortised and tenoned joinery. The corner posts were hewn from fresh timbers cut for the second period of construction. The four corner posts were neatly hewn on all four sides to a smooth, flat condition. Of the four post sides, two sides face the exterior and two receive the tenons from the intersecting walls. The two exterior faces of the corner posts were carefully hewn flat. The other two sides receive the log ends of the intersecting log walls. The four corner posts measured roughly 6" thick by 9" wide. The eave walls face west toward the road and east up the hill. The narrow 6" dimension of the posts at each of the four corners faced east and west respectively. The broad dimensions of all four posts were faced to their respective north/south gable ends.

The structural design for the building's framing on the second floor log level did not include braces⁴⁸, which were typically included to stiffen a frame against the pressures of the wind. The presence of braces would have put the building into a Type 6: Braced Frame Log Construction classification. In order to compensate for the lack of braces, the builder deemed it necessary to firmly secure the upper and lower post ends with complex joinery. The joints included by-pass mortise and tenons, half dovetails and cogs.

⁴⁷ Notched crib is where the ends of the horizontal logs in a crib are locked together to keep the building standing in a plumb condition. The Schubert-Graber log-post shop does not use notched crib construction. Notched constructions are also known as cross cornered constructions.

⁴⁸ Braces are typical components of most timber frame buildings. Made of either hard or soft woods or varying sizes they were set at corners at 45 degree or 30-60 degree angles. Braces stiffened buildings against wind pressures.

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The complexity of the corner joinery securely locked the intersecting sills, plates and posts together into a rigid frame.

The four corner posts have two sides each that receive the tenoned ends of the horizontal logs. The door posts each have one side, making a total of twelve post sides that received the logs. Ten of the twelve post sides are cut with individual mortises to lock the tenoned log ends in place. The other two post sides faced each other at the south wall next to the southeast corner. The two opposing posts, one corner and one man door post were fashioned with long trench mortises. Why the shop's posts utilized two completely different types of mortises has yet to be discerned.

The Type 4: log-post construction represented by the Schubert-Graber log post shop and Type 6: braced frame log constructions can be found outside of Pennsylvania in Maryland and West Virginia. Maryland has a rather large concentration centering on the Antietam National Battlefield site and the small town of Sharpsburg in Washington County. However, there were many variations in how the frames were designed and built and how the braces were included in Type 6: braced frame log constructions. The heavy braces used in Maryland were the same thickness as the wall logs. The heavy braces were through the wall, exposed to view on the exterior as well as the interior walls. Most of the larger braced frame log constructions observed in Pennsylvania had the braces chiseled into the exterior surfaces to a depth roughly averaging 2-1/4". The braces could not be seen on the interior.

European corner-posted constructions

Log buildings cover not only the entire European continent, but most of the globe as well. Log buildings and structures can be found wherever temperate forests and weather conditions exist. Surprisingly, those same log buildings can be found in countries where temperate conditions do not exist. Logs from temperate areas often were shipped to more remote areas lacking trees. For example, it has been determined the logs for the 742 BC King Gordius tomb log crib located in central Turkey were shipped from Lebanon some 200 miles distant. The Christian Bible documents the Jewish Temple built by King Solomon in Jerusalem between 970 and 931 BC used cedar trees from Lebanon. Even a few thousand years ago, distance and craftsmanship as well as intricate designs and large, complex buildings were possible. Every shape and type of log building imaginable can be found dating back several thousand years. Physical remains of log cribbing have been dendro dated to 5026 BC. Log buildings are still being constructed. There are literally hundreds of log building companies scattered all over the world. Thousands of new log buildings, mostly residences, are erected each year. Historic log housing and out buildings exhibit many types and varieties that can still be observed through-out the large expanse of Europe.

Numerous European open air museums literally have dozens, if not hundreds, of these log-post buildings or structures scattered all over the Continent.⁴⁹ After enquiring of many scholars, craftsmen and tradesmen who either study or restore the old European wooden buildings, only the man in charge of Romania's national Dimitri Gusti museum in Bucharest had the confidence and experience to say "*the corner posts were raised first, all horizontal wall logs were then slipped down the trenched grooves and the top plates set last, binding the whole into one solid wind resistant structure.*"⁵⁰ The raising process described by the Romanian building expert would work for trench mortised posts only if the trenched groove ran all the way to the top of the post. In the Schubert-Graber shop only two sides of two opposing

⁴⁹ The European Open Air Museum (EOAM) association has over 1500 member museums. The count includes village, county, provincial and national museums of from a few buildings to several hundred such as the Seurasaari Museum in Helsinki, Finland.

⁵⁰ Constantine Vescue, Building Manager for all historic construction at the Dimitri Gusti Museum, Bucharest, Romania.

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posts had trenched mortises. However, the trenched mortises stopped several inches short of the tops and the bottoms of the posts. It was not possible for the horizontal logs in the Schubert-Graber shop to be slipped down between the posts with grooves facing each other due to the solid uncut tops of the posts. The Romanian method of raising the corner-posted buildings does not work for vertical corner posts with individual mortises that house individual tenons.

The *Type IV: Log-post construction* is one of the widespread types seen in many countries. While many researchers and authors have studied and written about log buildings, for some unknown reason, most researchers have ignored the unique style of construction herein generally referred to as corner-posted. American authors have made many claims about where our log building heritage originated. None of the authors writing about any type of log building to date has demonstrated an understanding of the subject's breadth and depth concerning the use of log buildings in Europe much less those built here in the United States. Where log buildings exist, corner-posted types are usually found among the more common cross cornered log varieties. Nearly all European countries have some type of corner-posted constructions. They are found from Scandinavia, the Baltics, Balkans, and all through the western, central and eastern European countries. Log buildings liquidly flow on into the vast northern reaches of Russia and the exotic eastern countries such as China, Korea and Japan. Our knowledge about log buildings in general and specifically with regard to the corner-posted types has been radically skewed by quick studies performed mostly by professors on sabbatical. Most researchers took only a few months' sabbatical to perform field research studies. Terry Jordan, a Cultural Geographer from the University of Texas, was an exception. He took at least two years to study in Europe and write his findings, which were published in books and articles concerning his understanding of the origin and dissemination of log buildings. Unfortunately, as with Jordan, most of the researchers had no meaningful construction background with log buildings, no hands-on experience and little idea of what they were reviewing. They went, they saw, they wrote, but they did not understand. Most of what has been written to date is only marginally accurate.

The corner-posted log buildings observed throughout Europe were definitely influenced by the spread of the various Germanic regimes that cover well over a thousand years of empire-building and later retraction. In the early 12th century the reigning German tribes entered and occupied the Baltic States today known as Estonia, Latvia and Lithuania. Beginning in 1227 AD in the area of Riga, builders, guided by their Germanic masters began using the corner-posted method of construction. According to Martins Kuplaise, PhD, curator in charge of all historic buildings in Latvia's national open air museum, by the 14th century builders avoided the corner-posted method of construction for housing since it was too difficult to make the corner joints air tight to retain heat during the long, cold and bitter winter months.⁵¹ Many cultures and peoples throughout the Baltics continued to utilize the building type as a sufficient and suitable method of construction for warehouses, all farm buildings and city outbuildings, but not for dwellings. Among the best examples are the roadside taverns that for centuries dotted the Continental landscape. The tightly scribed, cross cornered log tavern cribs were used for housing staff and overnight guests. However, the horses, draft animals, wagons and coaches were kept overnight in the stables directly attached to the gables of the tavern building. The tavern stable wings were built of *post and panel* style log constructions. A quick and easy way to build a log shelter for many animals or in which to store wagons and other machinery was to hew long trench mortises in the sides of posts, raise the posts to vertical positions and slip 4 to 5 meter long logs with tenoned ends scribed to fit on top of each other down between the posts forming panels. The tavern buildings have been seen in Estonia, Latvia and all the way down to Hungary. While the typical cross cornered log dwellings scattered in almost all European countries were generally much more carefully built than the same type of buildings in the

⁵¹ Kuplais, Martins. Personal interview, Latvian Ethnographic Open Air Museum, Riga, Latvia office, October 15, 2015

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United States, the *corner-posted* log buildings in Europe tended to be of less careful construction than those observed in America. Here, builders raised corner-posted log construction to an art form where in Europe corner-posted log buildings fell to a low status due to the inability to stop air leakage through the corners.

When corner-posted building technology was first introduced into the United States is unknown. Corner-posted log building types were definitely part of our architectural repertoire by the last quarter of the 18th century. However, most of what remains for study and review today are the better built, maintained and protected buildings, not the expediently, quickly built, exposed and poorly maintained settlement-era and original family buildings that have long ago fallen into dust. The poorly built examples no longer remain to give us a more complete picture of the corner-post building types. Contrasting European traditions, American corner-posted log buildings tended to be used more for houses than barns and other secondary buildings, which was the normal use in Europe. Throughout Pennsylvania (typically the southern half of the state below Interstate 80) there are dozens of corner-posted houses now exposed to view. Most are recent "restorations" where the corner-posted log shell has been stripped of its protective siding with the mistaken idea the logs were originally exposed. These so-called "restored" houses will ultimately suffer the severe log damage the Schubert-Graber log shop has suffered. Almost all American log structures were intended to be and should remain covered with sidings of one type or another, not left exposed to the weather to rot away. Unfortunately, the protective layers of sidings hide the frame work, and, therefore, most existing corner-posted log houses remain unidentified. It is the doomed, unsided corner-posted buildings that can be identified and are usually available for study—at least the roadside exteriors are available for review.

The American version of the corner-posted log building is quite different from the European models. The American version has spaced logs requiring chinking and daubing to close the walls. The European counterpart has tightly-scribed log walls needing no chinking or daubing. Most European types have long trench mortised posts while in the United States most logs have tenoned ends fitted to individual mortises running up the sides of the posts. The European corner-posted structure tends to be the type of construction used for secondary non-dwelling type warehouses and out-buildings. The American version is used primarily for housing and exhibits a high degree of skill and execution in the construction. While there are exceptions to all these comparisons, it is clear from the last eight years of research that American corner-posted log buildings were generally built for dwelling houses and that most of the exposed buildings were braced. That makes the significance of the Schubert-Graber log shop much stronger due to its rarity in not having braces, that it was always left exposed to the weather, and that it was a shop and not built as a house.

Regional shop building comparisons

Several other posted log buildings and all published articles that could be found were reviewed to establish a context for the Shubert-Graber log-post shop. The study covered the local Lehigh County area, Pennsylvania and the larger Mid-Atlantic region. Unfortunately, so little information exists for review, no meaningful information concerning a national context for posted log constructions can be included at this time.

The search for similar buildings in Lehigh County resulted in locating two partially exposed variant types of posted constructions. One building is the 1760 Pub and Grill located at the intersection of Rt. 100 and Trexlertown Road in Trexlertown. Built from first growth trees, with very large, closely spaced, vertical corner and intermediate posts, the building has been continuously used as a tavern. While the interior of

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the 1760 Pub was stripped to reveal the corner posts and logs, the exterior of the Pub building remains completely encased in stucco affording no view of the structural elements or their marriage marks. Marriage marks were typically made on the exterior faces of corner-posted log buildings. The original 1760 Pub was a full two stories. To the rear of the first period crib was added a sizeable addition built using the same method of construction. Both periods of the Pub building's construction fall into the unbraced *Type V: Post and panel construction*. The Type V construction is nearly the same as the Type IV. The difference is the Type V building consists of multiple wall panels while the Type IV has only one panel forming each wall such as the Schubert Graber shop.⁵²

A second comparison building from Lehigh County is located near Shimerville in Milford Township. A two story farmhouse situated on a mildly sloping to flat piece of ground consists of a stone first floor and a log-post second floor which is covered with stucco. A 1794 dated two story stone addition joins the south gable of the earlier stone - log house. The second floor of the first period two story section is composed of a *Type V: Post and panel construction*. The rear wall section of the *post and panel* construction can be observed up under the original overhanging 18th century porch roof. The logs are thin, measuring 4" and could be termed *planks*. The logs are vertical sash frame sawn all four sides. The corner posts are not braced. There are some great variations on the construction theme in this building, and the exterior marriage marks that mated the "planks" to the posts are very similar to the marriage marks observed on the Schubert-Graber log shop. The Shimerville house has two panels connected side-by-side qualifying it for the Type 5: Post and panel construction category.

Archeological Investigations Performed to Date

From 1994 to 1996 archaeology was performed at the Schubert-Graber property immediately adjacent to or within a few feet of the foundation of the existing log-post shop. The investigation was performed by a combination of members of Chapter 14, Society for Pennsylvania Archaeology, supplemented by Kutztown University's archaeological field class. The investigation was requested and paid for by members of the Hivel and Dahl Preservation Society. Philip A. Perazio from Stroudsburg, PA was the lead archaeologist on site. Perazio wrote the one preliminary report that survives. Six 4' square excavation units were excavated. No schematic of the test unit locations survives. However, the one preliminary report written by Perazio and Bruce Mordaunt's memory locates the units as follows: One was located directly below the west front wall's south window adjacent to the foundation. A second was also along the front wall just north of the door location. Another was just north of the front wall at the northwest corner. The final three units were arrayed along the uphill east side. One of those units was a few feet northeast of the east rear wall and a bit north of the building. It was in the northeast excavation unit where the clay fired water pipes were discovered.⁵³ The remaining two units were not located by Mordaunt or referenced in Perazio's report except to note the remaining two units were located along the east rear wall somewhere.

The HDPS archives currently held by the organization's president Bruce Mordaunt include five lined paper field notebooks containing details of notes and stratigraphic drawings of the excavations and artifacts found. There are also several photographs of the digs. Final records and reports were not

⁵² All discussions concerning corner-posted buildings not referenced or cited were from research performed by the author of this nomination.

⁵³ No schematic of the archaeological excavation units survives. The scant written record does not precisely locate the units other than in a general sense. While Mr. Mordaunt's memory is good, he cannot precisely pinpoint the exact locations of the units. No conjectural schematic of the units was prepared for this report lest it lead future archaeologists to the wrong locations for future excavations.

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completed. Only one progress report survives. The one report clearly stated the conclusions were preliminary and the collected artifacts were not all cleaned and analyzed and the preliminary conclusions may change. The one and only surviving December 1996 preliminary report stated there was a massing of pottery chards centered under the southernmost second floor window. The archaeologist postulated the pottery deposits may point to domestic use. The report also stated there was evidence of industrial use in the form of machinery and equipment parts found. Unfortunately, no artifacts were dated or described.

The former president/founder of the Hivel und Dahl Preservation Society, Susan Farina, was contacted by Bruce Mordaunt. Mordaunt enquired of Farina if a final archaeological report had ever been written. Farina's answer was no. She said the HDPS board, after receiving the 1996 preliminary report, felt since there was so little evidence discovered during the three seasons of excavations from 1994 to 1996, any further expenditure of funds on artifact evaluation and a final report would be of little benefit. All the excavated artifacts were bagged, labeled, boxed and stored in the first floor garage where they were found during the investigation of the building for this nomination.

President Mordaunt also had in his possession for safe keeping one extraordinary pottery artifact recovered during the archaeology field work in 1996. A single, intact hand-thrown, clay water pipe section along with two other incomplete pipe sections was excavated about four feet below the ground surface. The pipes were removed from the excavated unit located very near the northeast corner of the log-post shop. The other two recovered clay pipe sections are unaccounted for. It is possible the two missing clay pipes are stored with the other bagged and tagged artifacts in the garage. According to Mr. Mordaunt, one partially exposed piece of clay pipe was left in the ground when the excavated units were backfilled.

The remaining 15" long piece of clay pottery stored at Mordaunt's house is an intact unglazed water pipe flared at one end to receive the narrow end of another pipe of similar shape. A clump of lime based mortar was adhered to the one end where two pipes were joined. The mortar was used to seal the pipe sections together against leakage. A dated May 11, 1996, photo showed four sections of clay pipe in place at the bottom of the unit. The clay pottery sections were part of a water piping system that brought water directly from a fresh water spring further up the hill down to the farm house and the 1865 barn located south of the shop building. The four sections of piping observed in the archaeology photo ran north to south by-passing the small log-post shop on its way to the barn. No dates are known or estimated for the clay water pipe system.



Clay pipe remnants of the water system uncovered during archeological investigations around the shop, 1994-1996.

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The Manwillers were able to provide detailed descriptions of the same underground piped, free flowing spring water systems that ran through the back porch of the farmhouse. The pipes and troughs Mrs. Manwiller was able to recall were all fed from the same spring on the hill above the Schubert property that fed the water pipe system for the barn. Mrs. Manwiller had no memory of the water flowing into the log-post shop first floor. She clearly remembered her mother working in the first floor room and no flowing water was ever present during her lifetime in the shop building's first floor room.

Further study of the stored artifacts or additional investigations may shed more light on the evolution or use of the log shop, or the larger property.

What can be learned from the shop building?

The Schubert-Graber shop building is valuable for the knowledge it contains of the technology of American design, layout, construction, and timber frame raising of corner-posted structures. More can be learned from the building's weather-induced log erosion and through its future preservation. The log shop can help architectural and construction historians as well as trades people and professionals understand other similar log buildings of its type and variation.

The technical research to date on the Schubert-Graber log-post shop building has only just begun. Newer dendrochronology techniques in the future may evolve that make it possible to help date buildings such as the heavily weathered Schubert-Graber log-post shop. If new techniques are developed, dendrochronology may be able to firm up the construction date of the shop. Future study of the interior and resumption of archeological investigations could further support the claim the building was used as a cooper's shop and identify other uses. Continuing investigations or further study of the building or sites may also aid in confirming whether or not the building was ever used as a residence. Over the next several years as the building is restored, there will be potential information discovered now hidden within the construction of the exterior timber walls. Techniques regarding the joinery may be revealed. Additional details about the builder and the methods used to raise the log walls may also be clarified. The master builder of the shop may eventually be identified through details used in the construction of the Schubert Graber log post shop when compared to other barns and corner-posted log houses in the region.

One of the remaining mysteries was why two very different variations of mortise and tenon joinery were used in the same building. The Schubert-Graber log shop consisted of four corner posts framed from sill to top plate. In addition there were four door posts that were also framed from sill to top plate. These eight posts received the tenoned ends of the horizontal wall logs. The corner posts each had two sides that received log tenons. The door posts each had only one side that received the tenons making a total of twelve post sides that intersected with the logs. Of the twelve post sides, ten post sides were cut with individual mortises to receive tenons from specific logs. These mated pairings were marked to make sure during the raising of the four walls the paired ends were matched as they were initially prefitted to go together. The other three post sides had trench mortises and tenoned ends. These trenched posts did not require members to be mated in an exact location. Both the individually cut mortises to receive specific tenoned logs and the long trench mortises were commonly found in Pennsylvania, Maryland and other states as well as over a wide region of Europe. However, it was only in the Schubert-Graber log-post shop that two types of mortises were used in the same building.

It has already been stated the process for raising a *Type 4: Log-post construction* building remains unknown. To compound the matter, "Why did the Schubert-Graber log shop have two different types of

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post to tenon joints used in the same small crib?" By using two different methods to prepare the posts to receive the tenoned ends of the logs, the builders needed two completely different methods for raising the walls in one small building. Why? What was the purpose? It is believed the varying use of the trench and individual mortises cut into the corner posts specific to each log had to do with raising the building. Log-post buildings were cut and pre-fitted together one wall at a time upon a timber framer's scaffold set only a few inches above the ground.

While the initial construction of the *Type 4: Log-post construction* walls were being assembled, other work had to be completed prior to raising the preassembled log walls into their final location on the foundation walls. The stone foundation had to be completed so the log sills could be laid. In typical two story barn construction, the second level floor joists were laid on the wide foundations. The joists were then floored with 2" thick planks fastened with heavy iron spikes or wooden pegs. After the foundation had been floored, the disassembled log framed walls were transferred to the floor. Each wall was assembled on the floor and appropriately positioned in readiness for the raising. Once the bents were assembled in the order they were to be raised, extra men were called in to assist with raising the walls. The extra men along with the barn or log-post building crew gathered on an appointed day to erect the shell that had been so painstakingly prepared.

Since the Schubert-Graber log-post shop is not a house, and is considered rare for using the least-known log-post type within the United States, and has such severe weathering on the exposed logs, there are many areas where research and on-going monitoring and study of the building will aid our knowledge in lending assistance to other log-post and braced frame log building restoration efforts. While there are never two buildings alike, the Schubert-Graber log-post building is representative of the salient features of the construction methods used to layout and cut the frame of most other posted buildings. What can be further learned about the shop building, its methods of construction, and those products and processes used during the restoration of the building will be useful for all other similar types of log-post variants. The variations between the several log-post buildings known to exist need to be studied and cataloged for greater understanding of these resources. Much is to be learned from this architectural typology and from the Schubert-Graber log-post shop.

The original configuration of the log and stone walls, both containing reused materials from the earlier building on this location, provides an opportunity for an in-depth study and potentially an improved understanding of how early corner-posted log buildings grew and evolved. Additional study will shed light on traditional European construction practices that lingered in use in the Americas well into the late 18th and early 19th centuries.

There are many as yet unanswered questions concerning the posted log shop built as a cooperage for Melchior Schubert. How were the log walls raised? Why were American corner-posted buildings better built, and more refined than European examples? The question of how the cooperage was raised remains the most puzzling. Were the walls preassembled and raised in whole wall units similar to the raising of barn bents? Only the first wall may have been raised as an entire unit. Thereafter the remaining three walls had to be individually erected. What were the actual raising procedures used to assemble and/or lift the preassembled walls into a unified sturdy structure? There had to be a specific process for raising the cooper's shop into a complete structure. The specific process of raising and assembling the timber frame log in-filled walls has yet to be discerned.

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Conclusion

Research on the Schubert-Graber log-post shop building has only just begun. Over the next several years as the building is restored, there will be more information uncovered now hidden within the joinery and scribe marks that will reveal the answers to some of the building's mysteries. Since the Schubert-Graber log-post shop is not a house, is a rare type within the United States, and has such severe weathering on the exposed logs, there are many areas where research and on-going monitoring and study of the building will aid our knowledge of this era of construction, and will guide restoration efforts for other log-post and braced frame log buildings. While there are never two buildings alike, the Schubert-Graber log-post building is representative of the salient features of the construction methods used to lay out and cut the frames for all other posted buildings. What can be learned about the building through further study will be useful for understanding other log-post variants. The variations between the remaining log-post buildings known to exist need to be cataloged and studied for greater understanding of the builders, construction techniques, the spread of cultural influences, etc. Much is to be learned from this typology. Much is to be learned from the Schubert-Graber log-post shop.

9. Major Bibliographical References

Brecht, Samuel Kriebel. *The Genealogical Records of the Schwenkfelder Families: Seekers of Religious Liberty who Fled from Silesia to Saxony and Thence to Pennsylvania in the Years 1731-1737, Part II*. Pennsylvania: Board of Publication of the Schwenkfelder Church, 1923. Pp 1152-1172.

Butterbaugh, Kelly Ann. *Lehigh County Then and Now*. Arcadia Publishing

Deed between Hivel Und Dahl Preservation Society and Powder Valley Estates. Lehigh County, Pennsylvania. 29 December 1992.

Erixon, Sigurd. "The North-European Technique of Corner Timbering," *Folkliv*, No. 1(1937), pp. 13-63

Farina, Susan B. President, Hivel Und Dahl Preservation Society. Letter to Dr. Small, Sociology and Anthropology Dept, Lehigh University. 12 January 1994. T.S.

Find A Grave. Lehigh County, Pennsylvania. www.findagrave.com. Web. 5 August 2016.

Phleps, Hermann. *The Craft of Log Building*. Ottawa: Lee Valley Tools, Ltd., 1982

Hutslar, Donald. *The Architecture of Migration*. Athens, Ohio, Ohio University Press. pp. 428.

Hivel Und Dahl Preservation Society. Letter to Kittaniny Archaeological Resources. Type script, no date.

Jordan, Terry G. *American Log Buildings: An Old World Heritage*. Chapel Hill: University of North Carolina, 1985.

Lagler, Carolyn. Black and white photograph of Schubert-Graber property. Circa 1935.

Miller, Beulah B., Heist. "The History of Powder Valley", unpublished paper, 1976.

Schubert-Graber Log-Post Shop
Name of Property

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Miller, Kathryn. Written history of Schubert family. Photo copy of handwritten pages, c.1992. Date discerned due to reference to 97 year old mother born in 1895.

Moose Roots. "Death Record of Elmer Graber, Zionsville, Pennsylvania." <http://death-records.mooseroots.com/d/n/Elmer-Graber>. Web. 7 August 2016.

Mordaunt, Bruce. Aerial Photograph of Schubert-Graber property. 1982.

Mordaunt, Bruce. "A Brief History of the Schubert." Letter to Doug Reed. 11 July 2016. T.S. Photocopy of death notices of Frank E. Graber and Laura Graber. 11 July 2016.

Noble, Timothy M., Nobel Preservation Services, Inc. "Mortar Analysis Shubert-Graber House." Unpublished report. 13 April 1995. T. S.

O'Brien, Marguerite E. Letter to "Committee." 6 April 1992. Photo copy of handwritten letter.

Perazio, Philip A. "Archaeological Investigation of the Schubert-Graber Site, Progress Report." December 1996. T.S.

Perazio, Philip A. "Archaeological Testing of the basement floor of the Schubert-Graber Log Structure." Letter to Hivel Und Dahl Preservation Society. 2 December 1996. T.S.

Forks of the Delaware Chapter No. 14, The Society for Pennsylvania Archaeology. Letter to Susan Farina, Hivel Und Dahl Preservation Society. 21 July 1994 and Work Plan Draft of the Archaeological Testing of the Schubert-Graber Site. 10 July 1994.

Reed, Douglass C. Interview with Paul and Francis Graber Manwiller. 31 July 2016. Second interview with Paul Manwiller. 7 April 2017. T.S.

Rempel, John I. *Building With Wood and other of nineteenth century building in central Canada*. Toronto: University of Toronto. Rev. ed, 1980. pg. 140-152.

Roach, Hannah Benner. *The Back Part of Germantown: A Reconstruction*. Pennsylvania: The Genealogical Society of Pennsylvania, 2001. Google Books. <https://books.google.com>. Web. 3 August 2016.

Schubert, Charles Paul. Letter to Mrs. Marguerite O'Brien. 28 January 1993. Photo copy of handwritten letter containing history of Schubert family.

Schubert, Charles Paul. Second letter to Mrs. Marguerite O'Brien. 25 February 1993. Photo copy of handwritten letter containing additional information about Schubert family.

Shedd, Nancy. "Corner-Post Log Construction: Description, Analysis and Sources. A Report to the Early American Industries Association." 10 March 1986. T.S. See the report and additional materials at: <http://www.huntingdonhistoryresearchnetwork.net/research-topics/corner-post-log-construction/>

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University of Pennsylvania Archives. "Mapping West Philadelphia Landowners in October 1777."
www.archives.upenn.edu/WestPhila1777. Web. 3 August 2016.

Webster, Noah. *An American Dictionary of the English Language*. George and Charles Merriam publishers, Springfield, Mass, 1851, pg. 833.

Wells, Tom. "Nail Chronology: The Use of Technologically Derived Features." *Historical Archaeology*; 1998, 32(2): 78-99.

Previous documentation on file (NPS):

- preliminary determination of individual listing (36 CFR 67) has been requested
- previously listed in the National Register
- previously determined eligible by the National Register
- designated a National Historic Landmark
- recorded by Historic American Buildings Survey # _____
- recorded by Historic American Engineering Record # _____
- recorded by Historic American Landscape Survey # _____

Primary location of additional data:

- State Historic Preservation Office
- Other State agency
- Federal agency
- Local government
- University
- Other: Hivel und Dahl Preservation Society, Lehigh County, Pennsylvania

Historic Resources Survey Number (if assigned): NA

10. Geographical Data

Acreage of Property: 1.27 acres

Latitude/Longitude Coordinates:

Longitude: -75.523954 Latitude: 40.473141

Verbal Boundary Description

The boundary is the current tax parcel for the property, which was created during a 2012 subdivision of the former farm. The parcel definition from the Deed dated 23 August 2012, PIN 54827905413-1 is: "All that certain tract of ground situate in the Township of Upper Milford, County of Lehigh, Commonwealth of Pennsylvania, bounded and described according to the 2012 Boundary Line Adjustment Plan for "The Hills of Powder Valley Subdivision Lots 12A & 12 Minor Sub" dated March 7, 2012 and last revised May 7, 2012, recorded in the Lehigh County Recorder of Deeds Office in Doc. ID No. 2012031168, as surveyed by Carl P. Lagler, Jr., Professional Land Surveyor."

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The Parcel is currently identified as 548273619328 in Lehigh County's online tax parcel mapping (see Figure 2); the boundary should follow the road edge even though not shown in the parcel boundary online.

Boundary Justification

The current property parcel was defined when the farm was being developed for residential units, and the portion of the farm containing the log shop was being negotiated for donation to the Hivel Und Dahl Preservation Society. Sites of former farm buildings and structures are known to exist within the current parcel, within the nominated boundary, but are not clearly defined. With further study, some of those sites may be established as "contributing" resources depending on their relationship and association with the shop. Based on future investigation, it may be appropriate to expand this nomination to include the historically-associated farmhouse and/or land formerly associated with the building, if any identified resources can be shown to help convey the significance of the shop and retain integrity.

Form Prepared By

name/title: Douglass C. Reed, Historic Structures Consultant
organization: Preservation Associates
street & number: 9604 Anderson Road
city or town: Mercersburg state: PA zip code: 17236
e-mail: doug@preservationassociatesinc.com telephone: 301-730-2699 date: July 2018

Additional Documentation

Photo Log

Name of Property: Schubert-Graber Log-Post Shop
City or Vicinity: Zionsville
County: Lehigh State: Pennsylvania
Photographer: Douglass C. Reed
Date Photographed: 27 July 2015, 10 November 2016

Description of Photograph(s) and number, include description of view indicating direction of camera:

Description

1. View along Powder Valley Road today, looking north toward the shop building
2. View northeast of log-post shop and garage addition
3. View southeast interior first floor bank wall
4. View south interior first floor stone wall
5. View east reused logs next to window
6. View west of surviving first period "V" notch log
7. View northeast of reused south wall log
8. View east front shop, garage at right and garage
9. View north window location filled in

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10. View east front wall first floor window
11. View north Type 1 door posts
12. View southwest Type 4 corner post
13. View west marriage marks
14. View east chinking
15. View northwest of pegged chinking
16. View southeast of mud daubing
17. View north of lime daubing finish coat
18. View south interior looking through lath, no daubing
19. View north in loft of unpegged roof rafter peak joint
20. View southeast north gable wall siding
21. View northwest slope south gable barge with bead
22. View west rear wagon doors
23. View south of second floor south interior wall with three doors
24. View north of second floor north interior log wall
25. Looking down through stove pipe hole in loft floor
26. View north south gable siding with first addition roof outline
27. View south interior second floor garage storage showing partial view of bents

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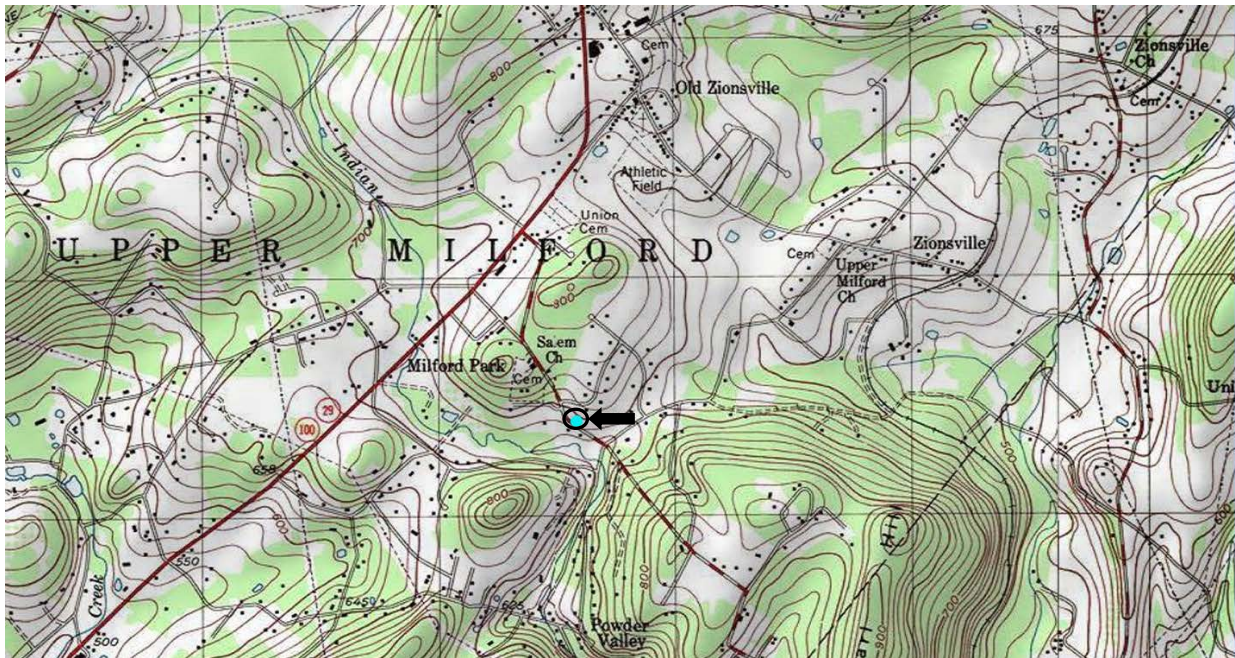


Figure 1: USGS map, East Greenville Quadrangle excerpt; Building indicated by arrow, marked by blue dot.
Longitude: -75.523954 Latitude: 40.473141

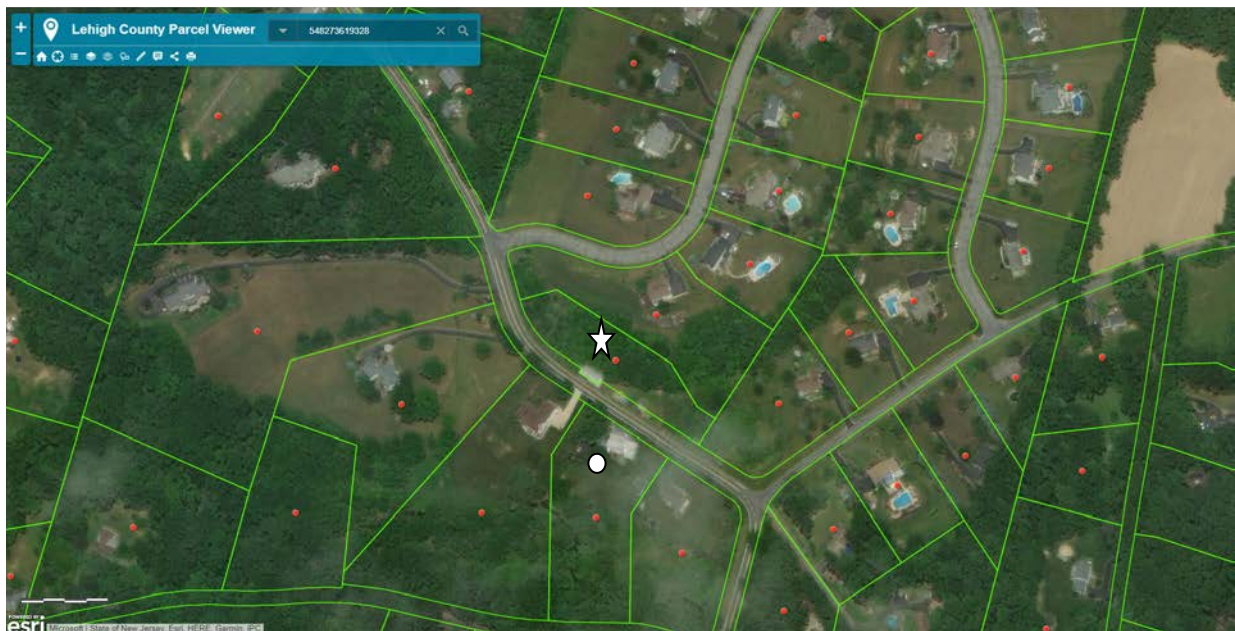


Figure 2: Site Plan with Boundary; parcel marked with “star” shape; 2018 Tax Parcel Map, Lehigh County, accessed 1/17/2018. Boundary corresponds to tax parcel # 548273619328. The boundary likely includes sites of former agricultural outbuildings or structures that may have had functional relationships with the log shop, and may be considered “contributing” with further study. The historically-associated farmhouse across Powder Valley Road (parcel marked with white circle) is not included within the boundary, but may contain information relevant to the history and development of the Log Shop. The southern boundary should follow the road edge, unless further study identifies sites under or across the road that contribute to the shop’s significance and retain integrity.

Schubert-Graber Log-Post Shop
 Name of Property

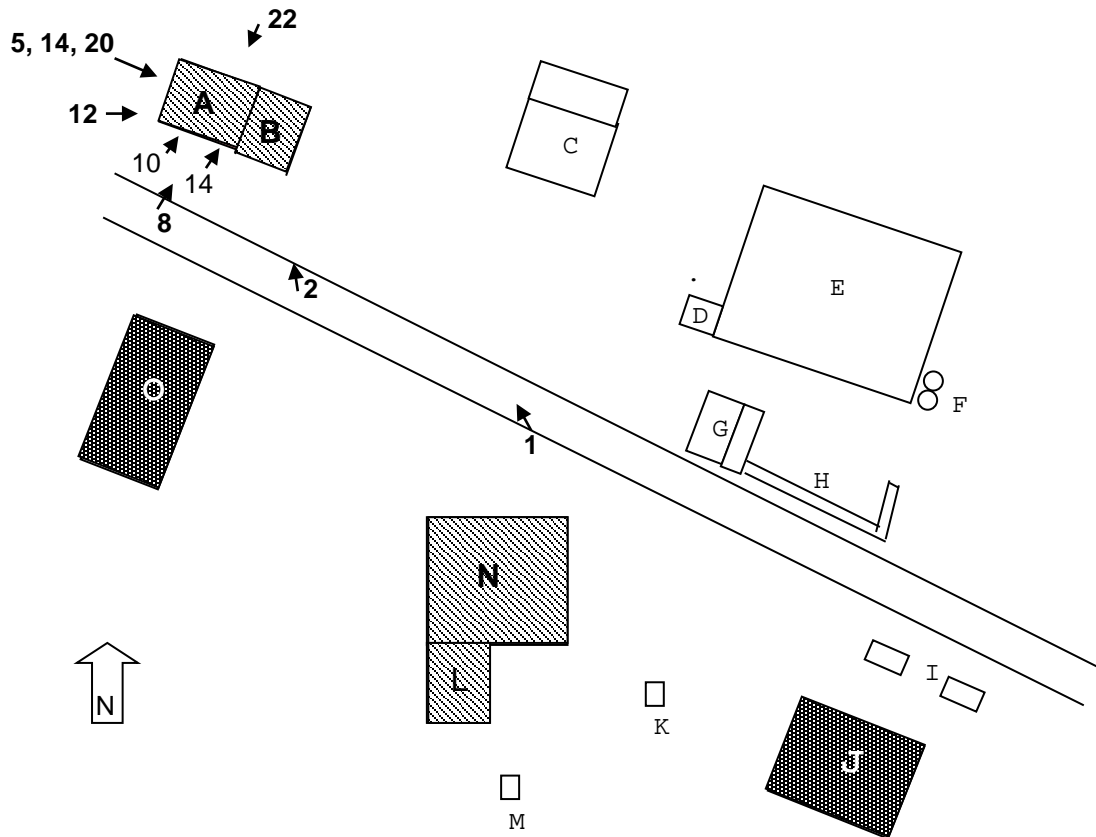
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Figure 3: Schubert-Graber Farmstead Site Plan with current exterior photo key (excluding some detail photos). Former resources, remaining historic buildings, and recent construction shown for reference. For nominated boundary, see tax parcel map (Figure 2).

Historic, demolished
 Historic, extant
 Recent

Farm Building Key (only A/B & N remain of historic buildings)

A. Log-post shop, ca. late 18th + early 19th c. B. Garage-storage c.1936 C. Corn crib tractor shed D. Milk tank shed E. Stone barn dated 1865 F. Wood silos, c.1936	I. Chicken coops (2) J. Post-1992 new house K. Privy L. Summer kitchen M. Privy N. Dwelling house, c.1800-25 O. Post-1992 new house
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Figure 4: Interior Photo Keys, excluding some detail shots.

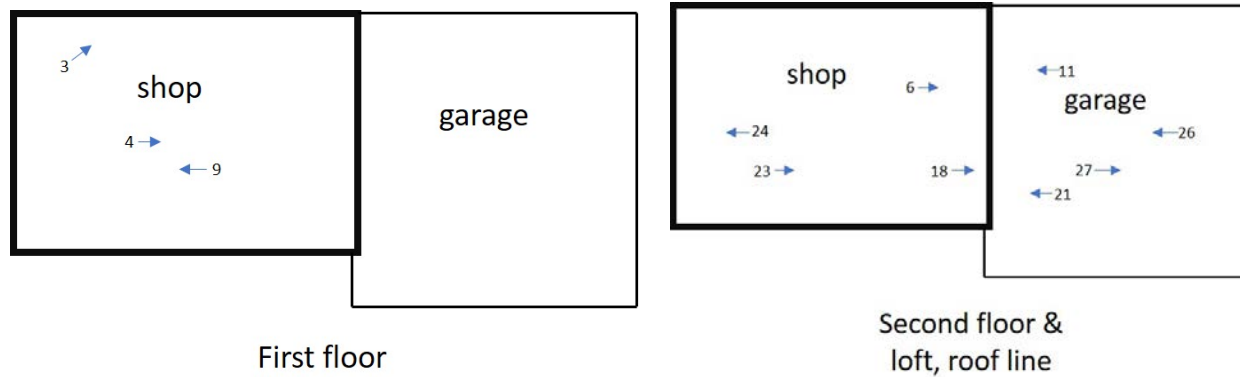
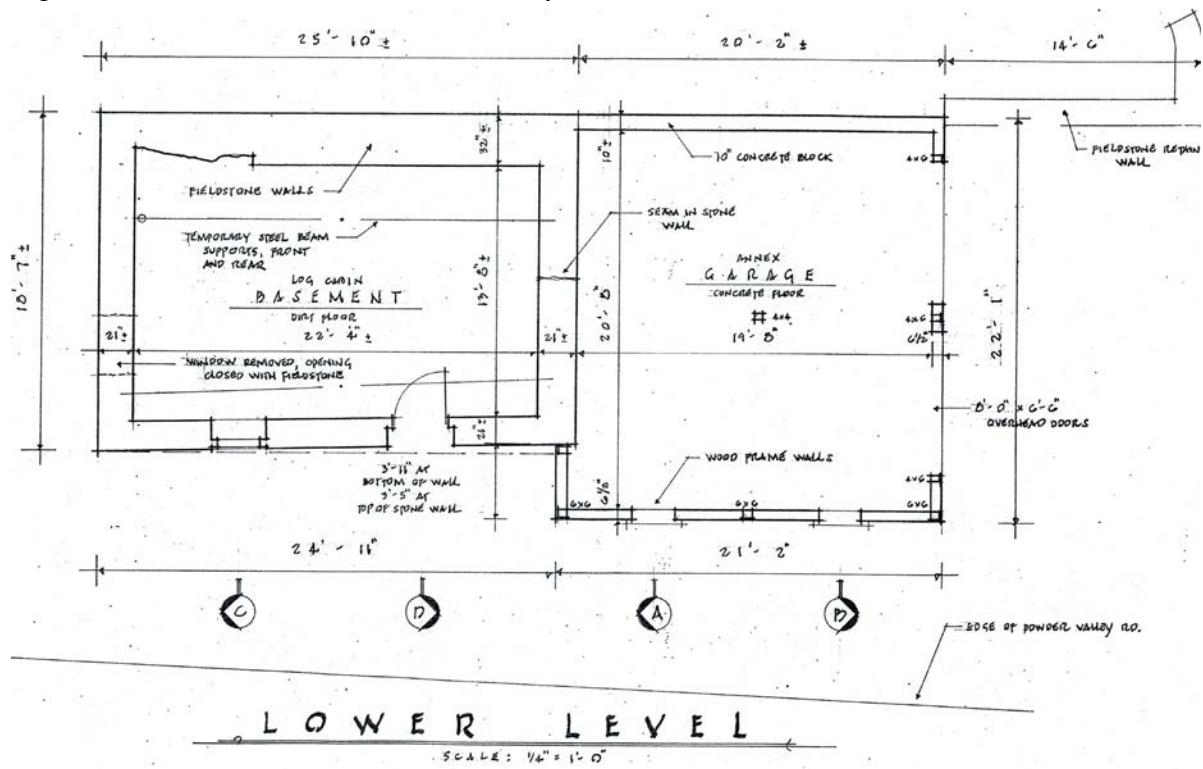


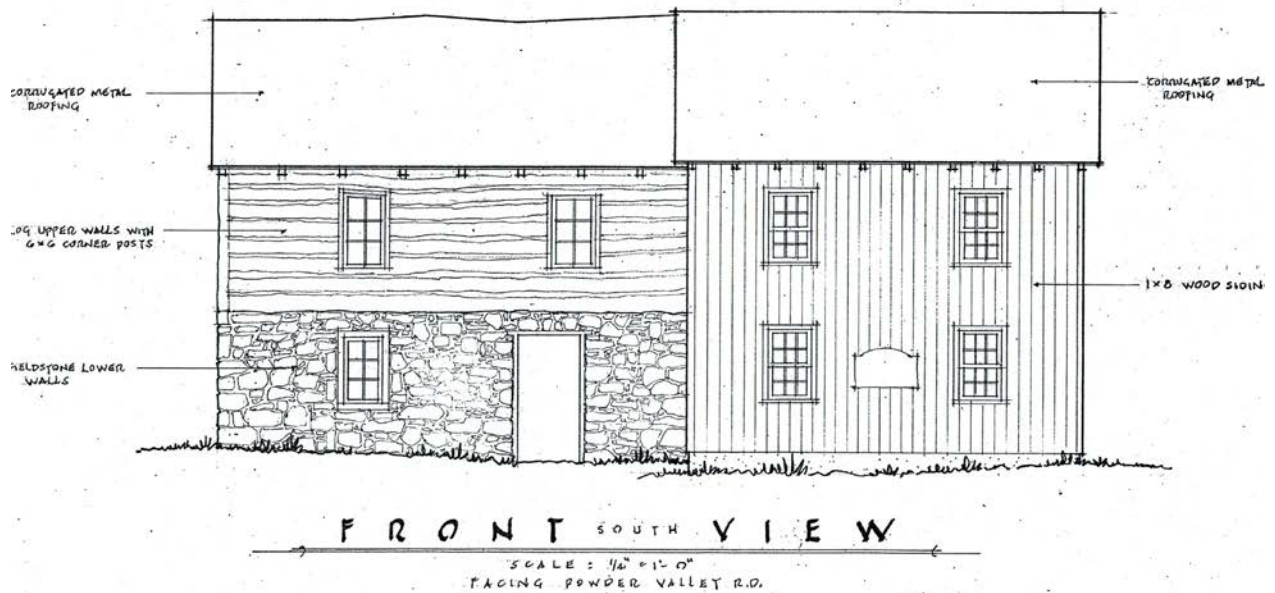
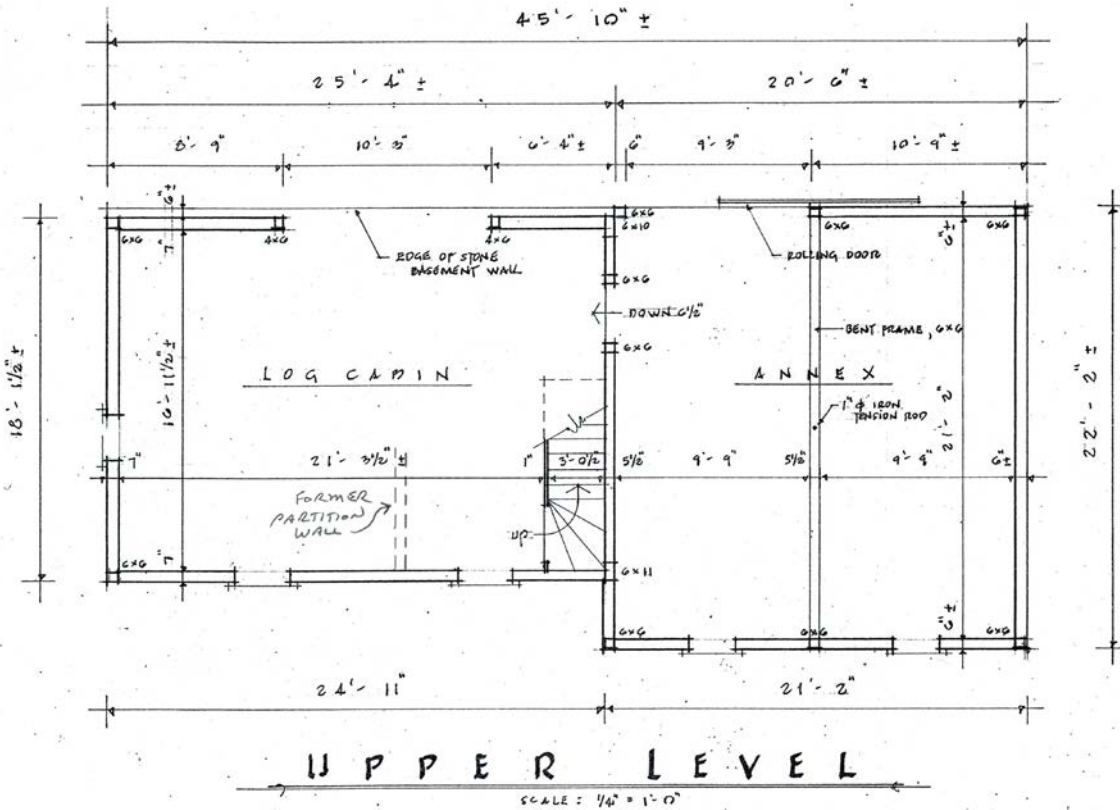
Figure 5: First Floor/Lower Level Plan (by Alan M. Hawman III, ©)



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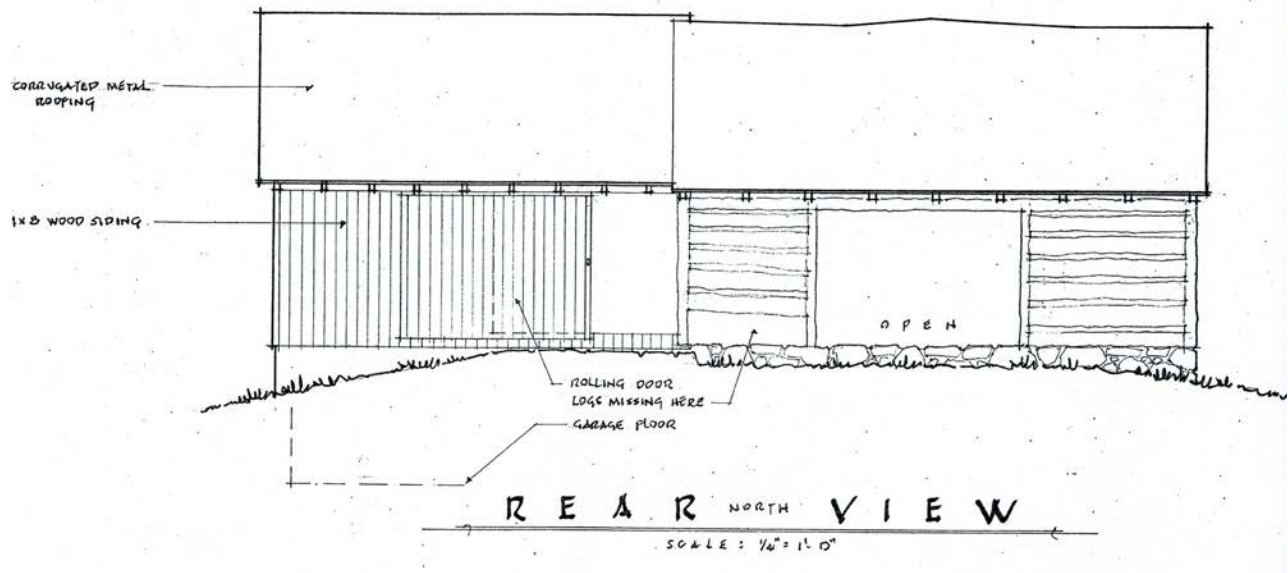
Second Floor Plan and Front Elevation (by Alan M. Hawman III, ©)



Schubert-Graber Log-Post Shop
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Rear Elevation (by Alan M. Hawman III, ©)

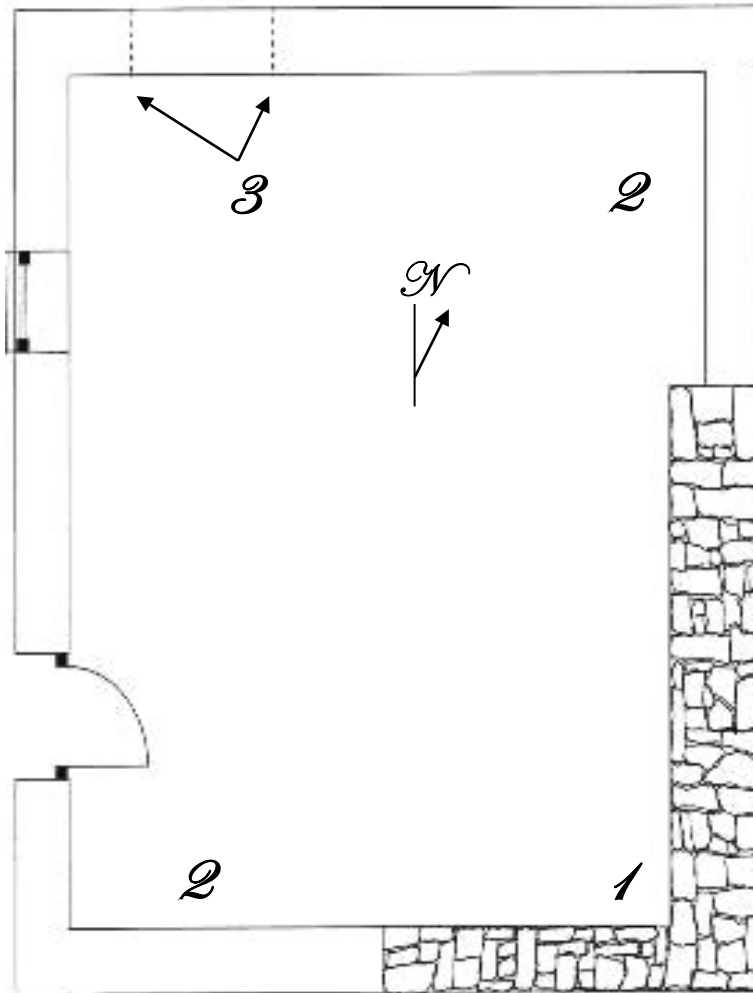


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Drawings, Douglass C. Reed, Historic Structures Consultant, ©

Drawing 1: First Floor plan showing the two periods of stone walls.

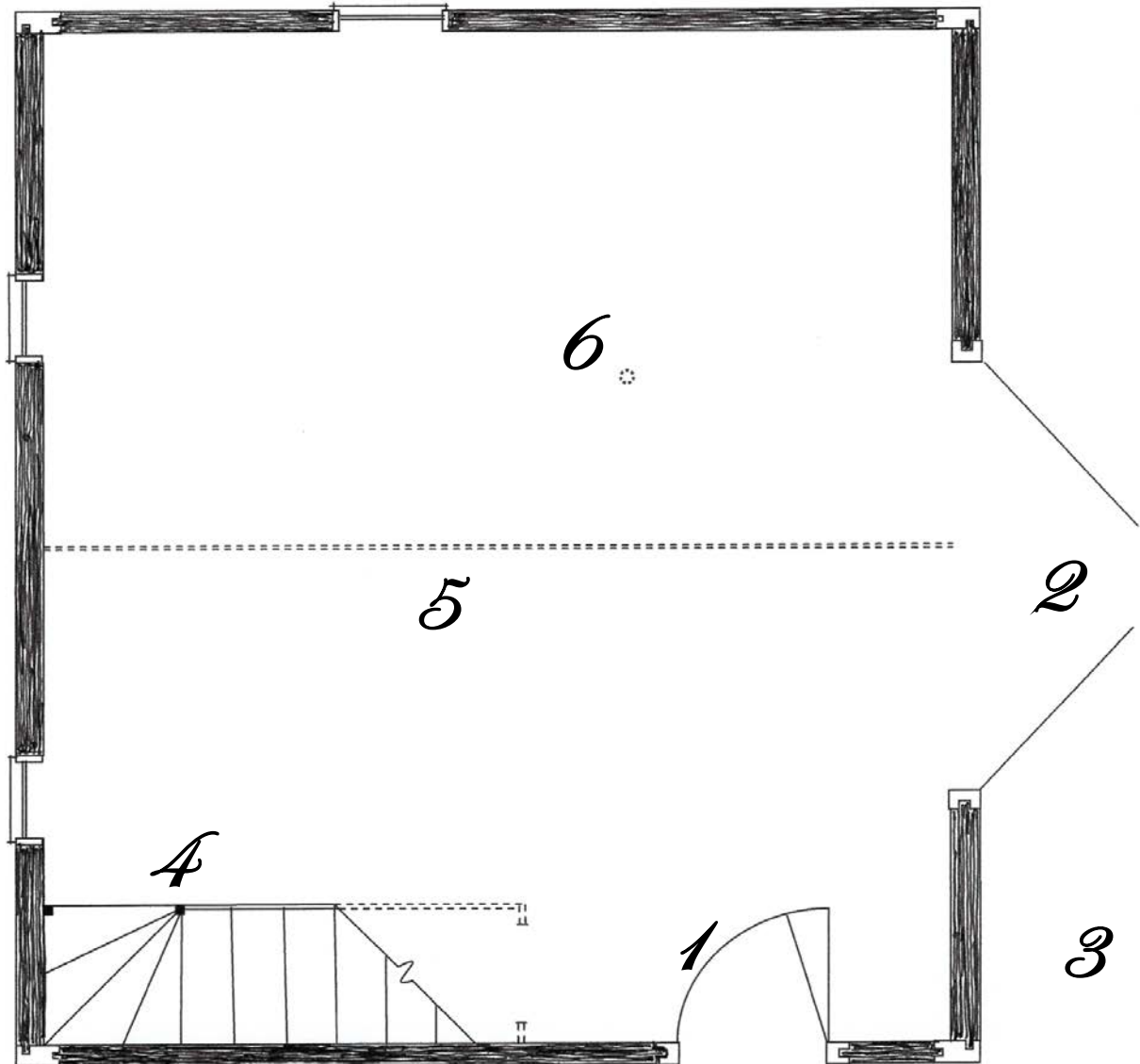


1. First period foundation bank walls reused in second period log-post shop.
2. Second period expanded foundations built for log-post shop
3. Ghost lines in foundation indicate an earlier horizontal slider window; period unknown. A c.1976 photo shows opening closed.

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Drawing 2: Second period plan second floor log-post level, noting location of certain construction details.

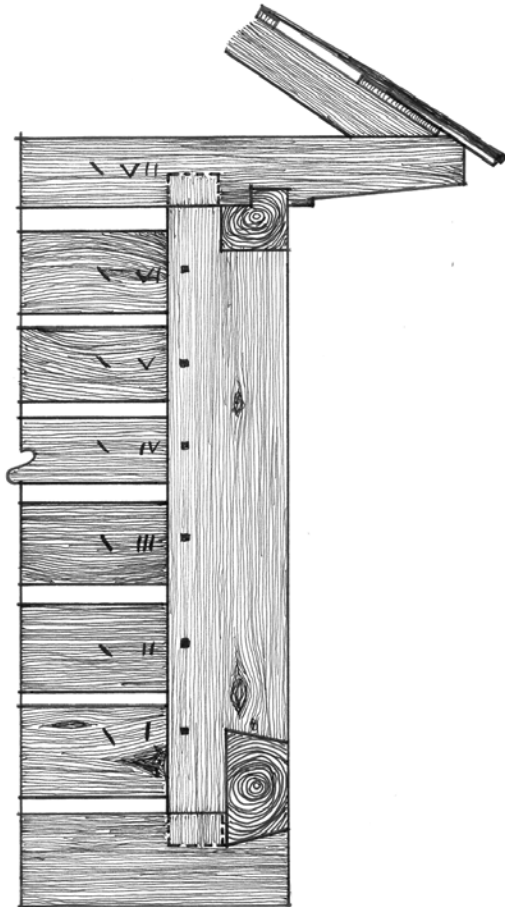


1. Double leaf over/under dutch style strap hinge hung door
2. Wagon doors were framed original to log-post walls
3. Corner posts mortised to receive tenoned log ends
4. Staircase to loft, not to lower level, never had doors hung in either opening
5. Temporary vertical board wall in workroom, period unknown, not original.
6. Flue hole cut in loft floor for temporary work room. No other evidence of heat.

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Drawing 3: Corner post at northwest gable elevation

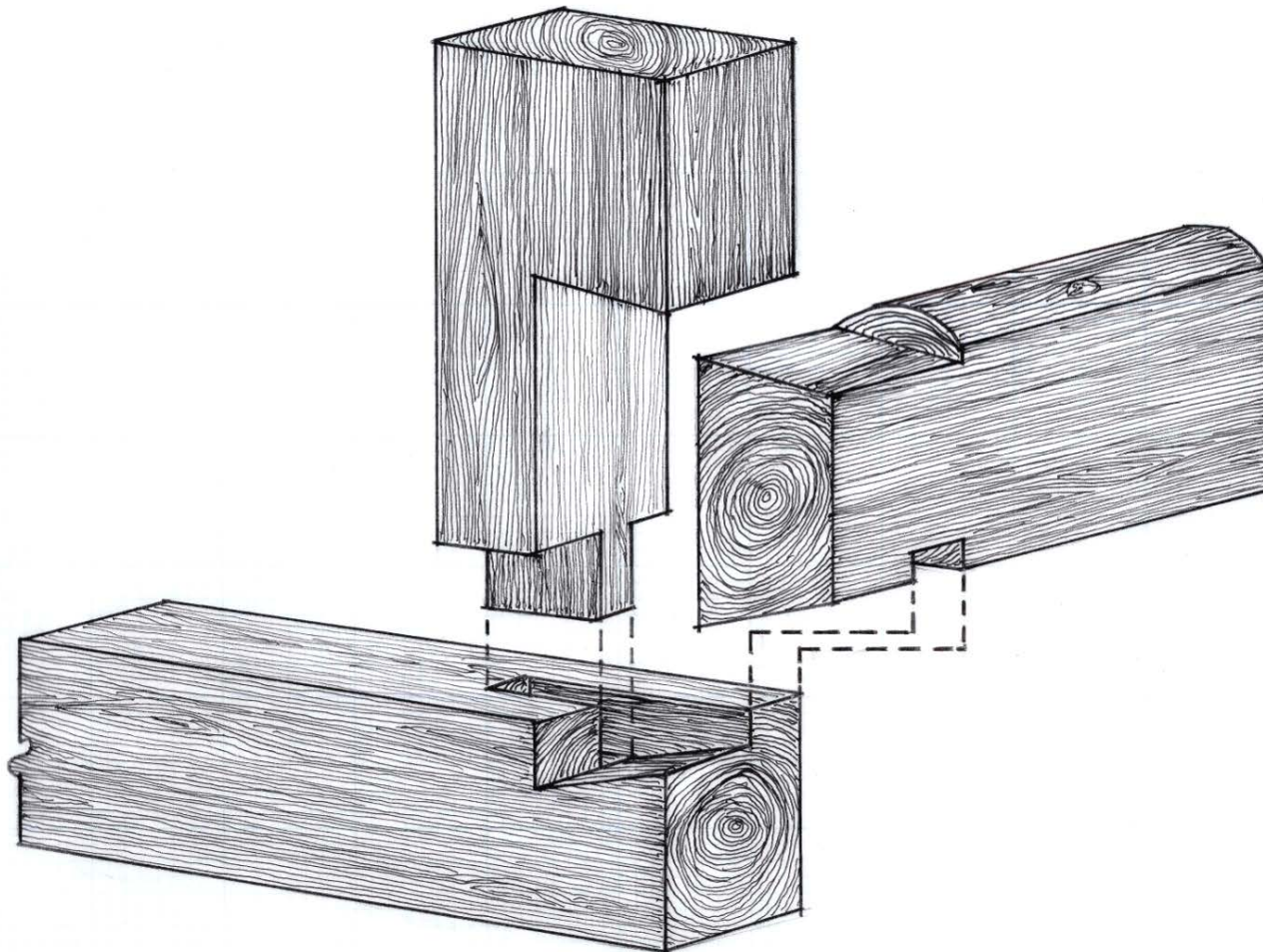


1. Eave sill at post base is captured by full dovetail, formed by gable sill and post. Back part of post has a stub tenon mortised down into gable sill.
2. Each log was tenoned and held in posts by individual mortises. Two opposing posts, one corner and one man door post, had trench mortises. The “why the posts had two types of mortises” is not yet understood.
3. The tops of the corner posts were locked in place with an offset cog and pegged tenon.

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Drawing 4: Bottom post to sill joinery

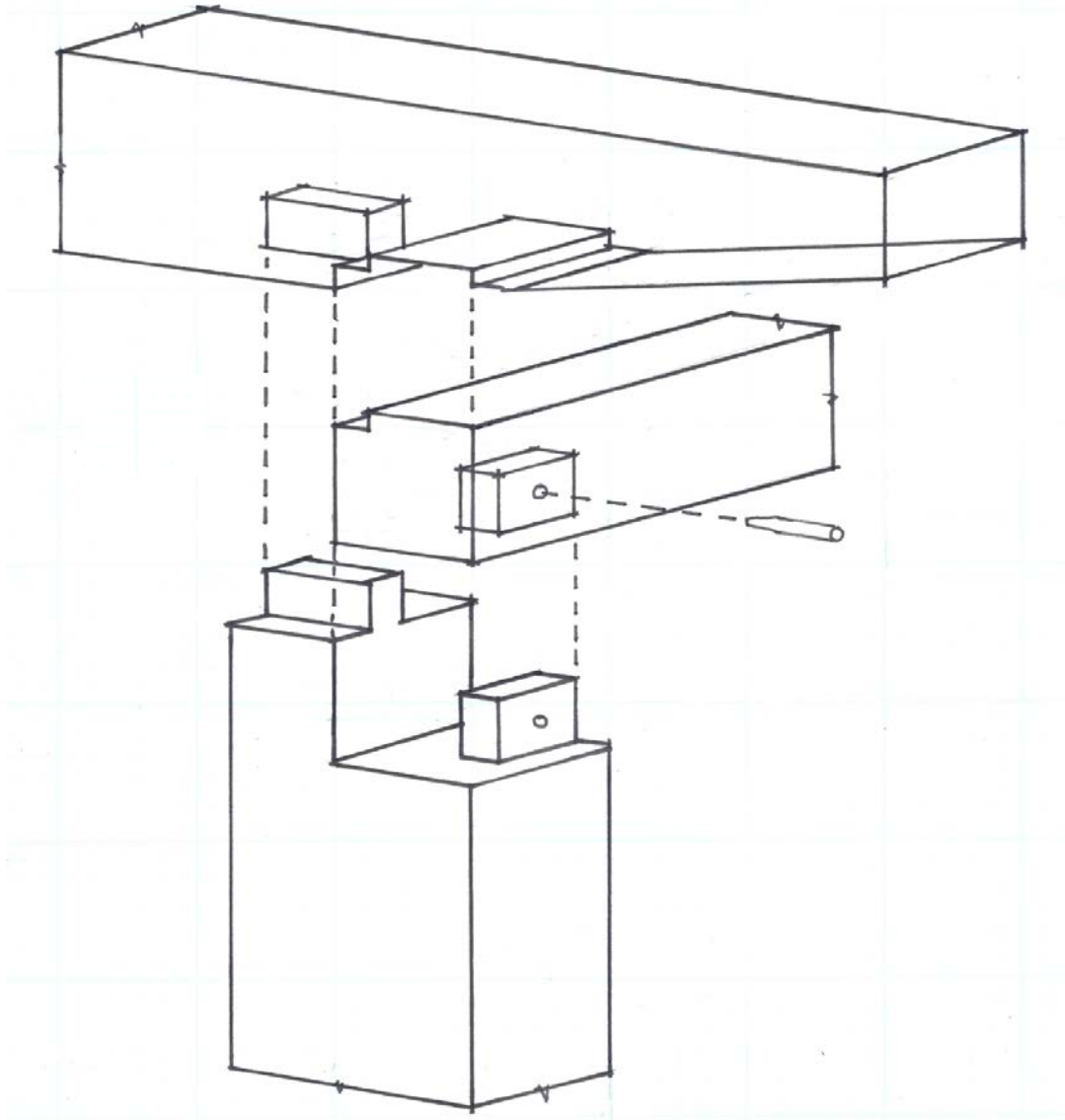


- The left gable sill was placed first on the foundation. It was cut with the bottom half of a dovetail. In behind the dovetail was the mortise for the post tenon. The back side of the mortise extended out to the face of the eave sill to act as a cog. The cog locked the eave sills in place and prevented them from slipping away from the gable sill and post.
- The eave sill was placed to overlap and cut to fit the end joinery of the gable sill. The top end of the eave sill was cut to receive the upper half of the full dovetail which captured the front portion of the post.
- The vertical post measured in dimension 6" x 9". The massive size of the post was not needed for supporting the logs and roof loads. Rather the post size was dictated by the need to separate the mortises on two adjoining sides of the posts and to negate the need to make a difficult and time-consuming right angle cut on the inside corner of the post had the post been thicker than the wall dimension of the log walls. The back end of the post had a tenon which was put in the gable sill mortise.

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Drawing 5: Top plate to post joinery

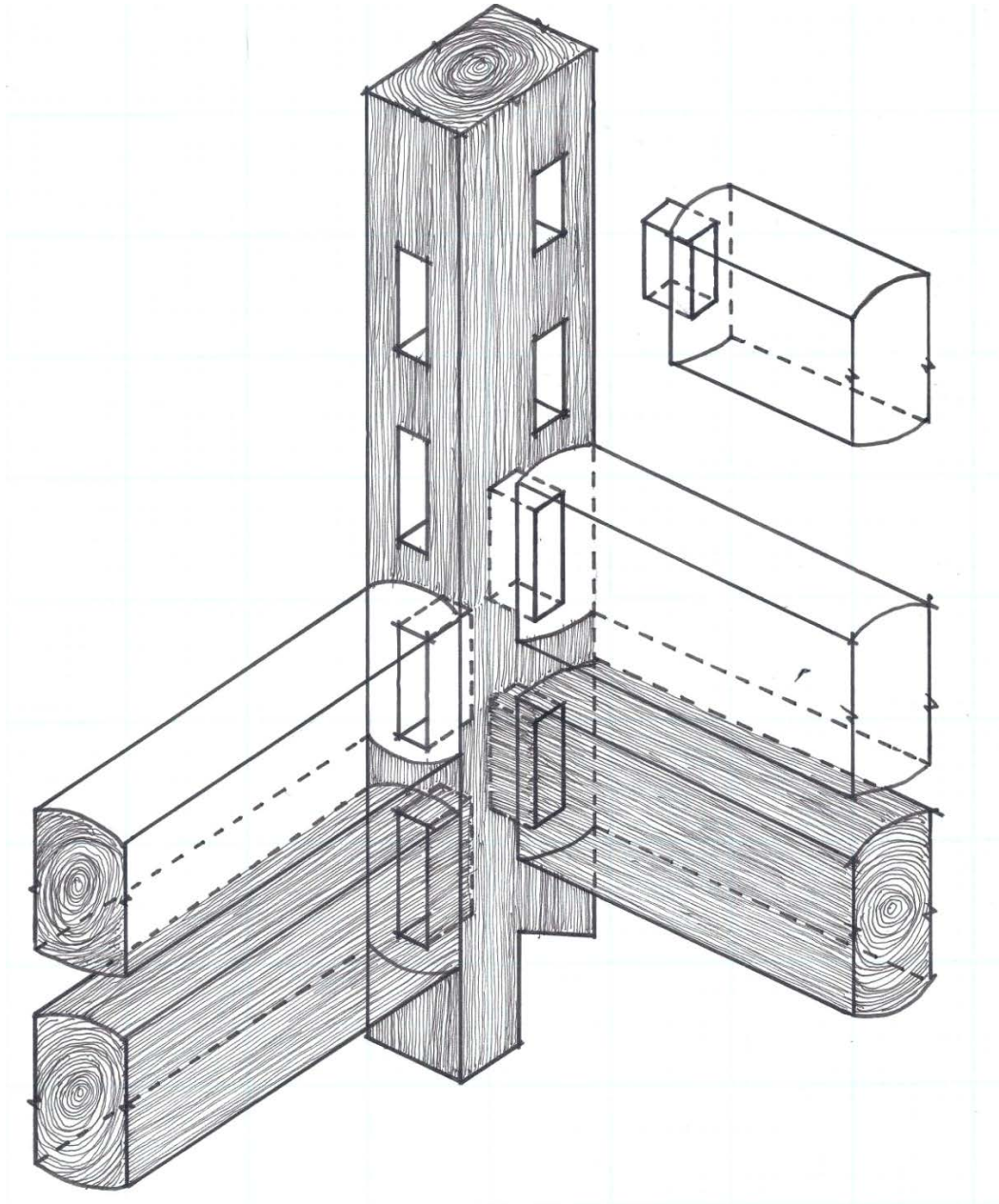


- Gable plate laps over eave wall top plate
- Eave plate fastened to post with mortise and tenon with wood peg.
- Post steps out behind eave plate tenon, continues on to gable plate and is pegged to gable plate.
- Loft joist extension 16", bevels up to end where stub tenoned rafters were placed in mortise at end of joists without any nail or peg.

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Drawing 6: Individual post mortises

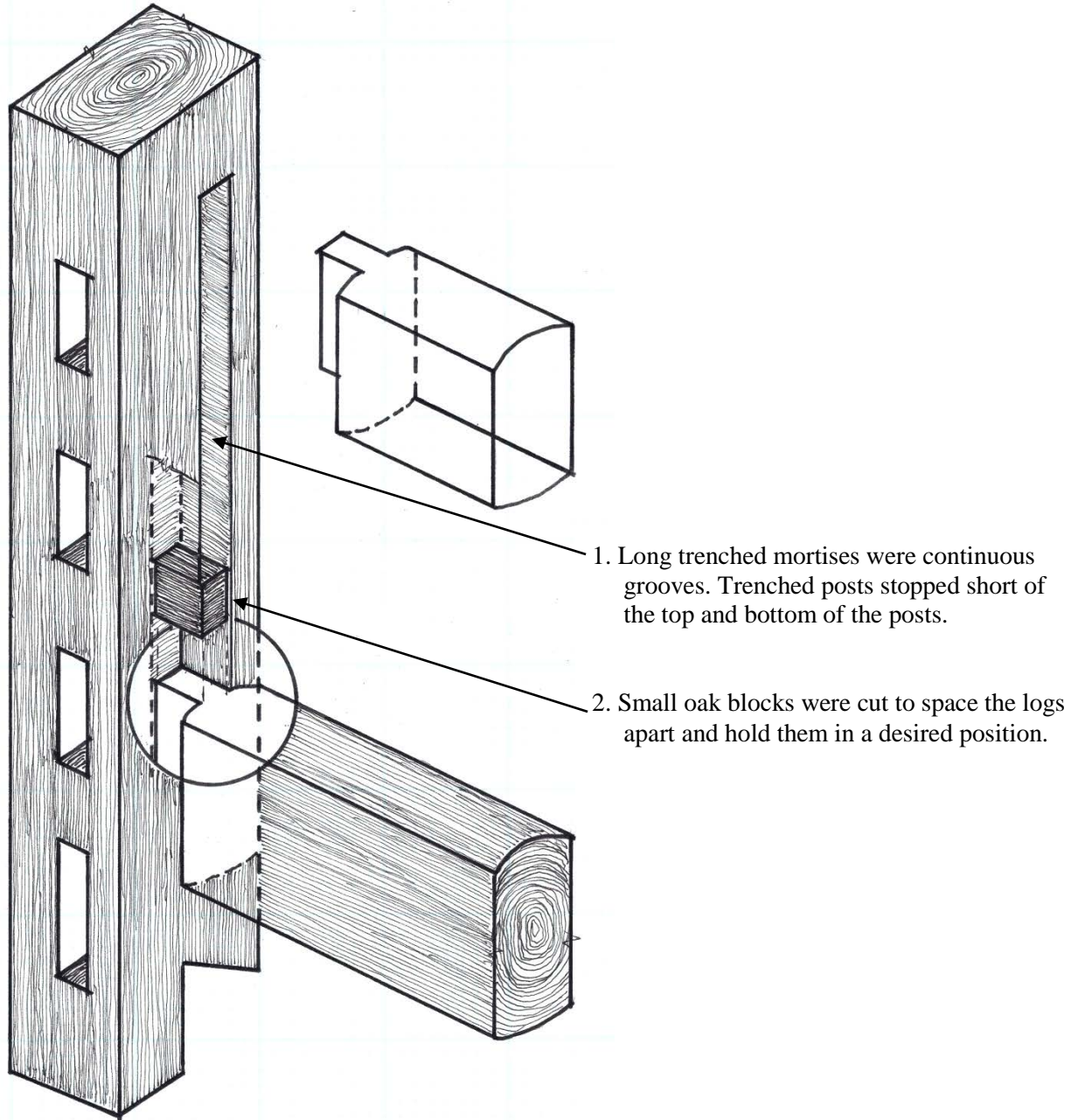


- There were twelve post sides with mortises in eight posts. Ten sides had individual mortises.
- Two sides in opposing posts next to man door had trench mortises.
- Log tenons were fastened into post mortises with square head wood pegs

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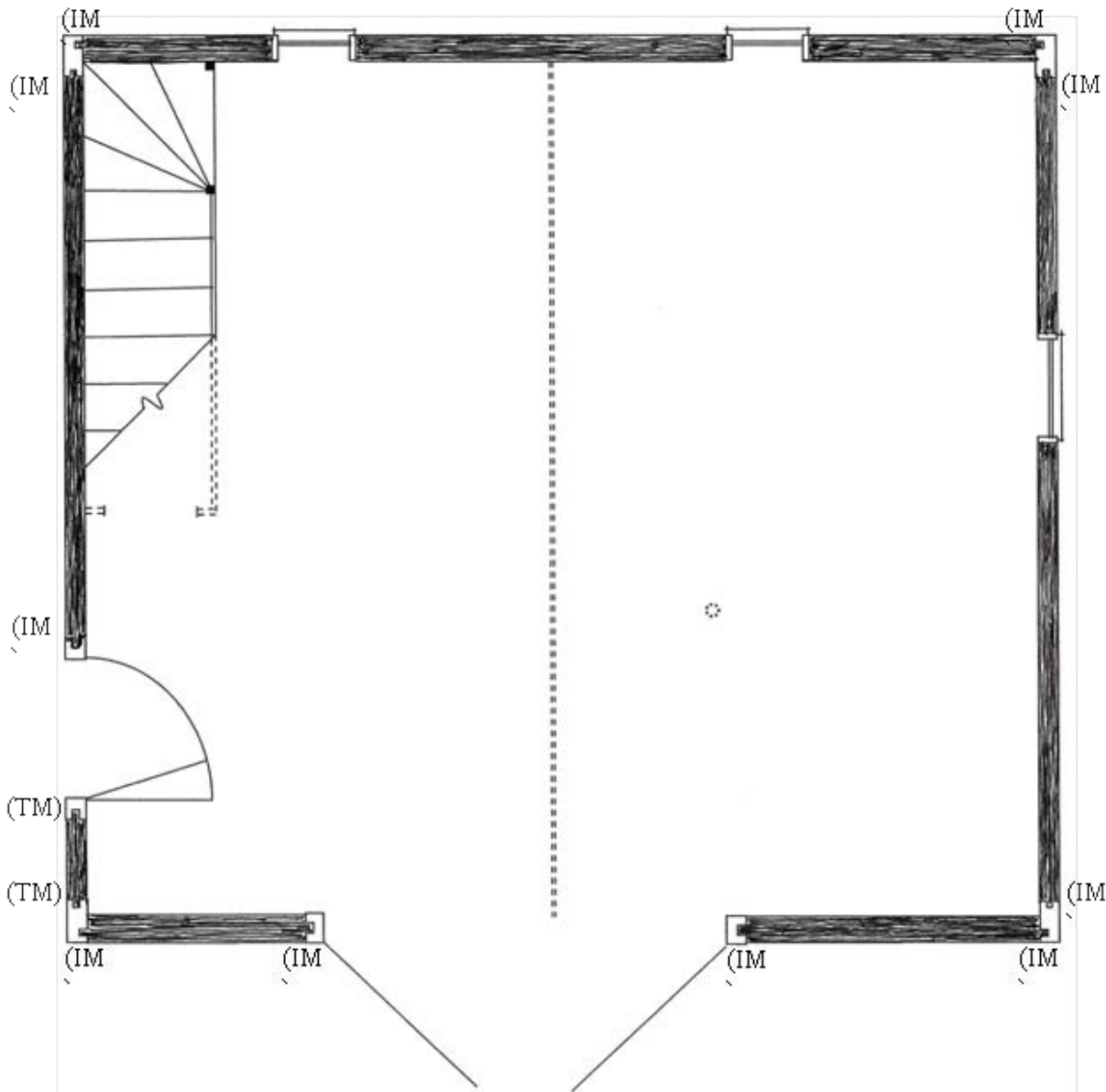
Drawing 7: Trench mortises in two posts



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Drawing 8: Second floor plan showing Type 1 (door posts) and Type 4 corner post locations. Most of the mortises are noted as individual mortises (IM). Two posts with trench mortises are at left lower corner, noted as trench mortises TM.







Schubert-Kraher
Log Cabin
Hotel and Bath
Preservation Society

Schubert-Kraher
Log Cabin
Hotel and Bath
Preservation Society

























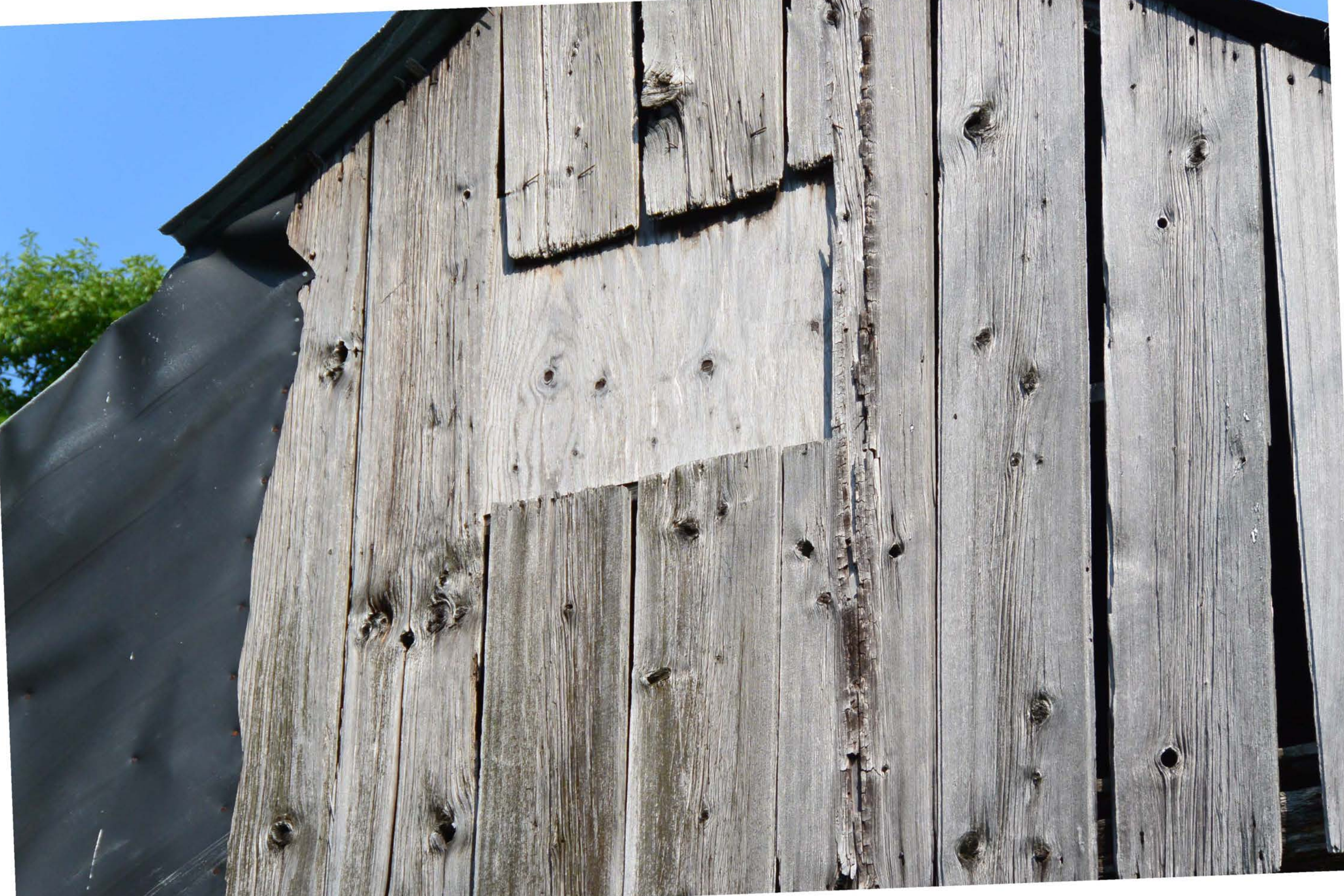


























UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
EVALUATION/RETURN SHEET

Requested Action:

Property Name:

Multiple Name:

State & County:

Date Received: 11/7/2018 Date of Pending List: 11/16/2018 Date of 16th Day: 12/3/2018 Date of 45th Day: 12/24/2018 Date of Weekly List:

Reference number:

Nominator:

Reason For Review:

- | | | |
|---|--|---|
| <input type="checkbox"/> Appeal | <input type="checkbox"/> PDIL | <input type="checkbox"/> Text/Data Issue |
| <input type="checkbox"/> SHPO Request | <input type="checkbox"/> Landscape | <input type="checkbox"/> Photo |
| <input type="checkbox"/> Waiver | <input type="checkbox"/> National | <input type="checkbox"/> Map/Boundary |
| <input type="checkbox"/> Resubmission | <input type="checkbox"/> Mobile Resource | <input checked="" type="checkbox"/> Period |
| <input checked="" type="checkbox"/> Other | <input type="checkbox"/> TCP | <input type="checkbox"/> Less than 50 years |
| | <input type="checkbox"/> CLG | |

Accept Return Reject 12/21/2018 Date

Abstract/Summary
Comments:

Recommendation/
Criteria

Reviewer Lisa Deline

Discipline Historian

Telephone (202)354-2239

Date 12/21/18

DOCUMENTATION: see attached comments : No see attached SLR : No

If a nomination is returned to the nomination authority, the nomination is no longer under consideration by the National Park Service.



Pennsylvania State Historic Preservation Office

PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

November 2, 2018



Joy Beasley, Keeper
National Register of Historic Places
National Park Service, US Department of Interior
1849 C Street, NW, Mail Stop 7228
Washington DC 20240

Re: Schubert-Graber Log-Post Shop, Lehigh County, PA

Dear Ms. Beasley:

Enclosed please find the National Register of Historic Places nomination for the Schubert-Graber Log-Post Shop. Included is the signed first page of the nomination, a CD containing the true and correct copy of the nomination, and a CD with tif images. The proposed action for this property is listing in the National Register. Our Historic Preservation Board members support this nomination.

If you have any questions regarding the nomination or our request for action, please contact me at 717-783-9922 or afrantz@pa.gov. Thank you for your consideration of this submission.

Sincerely,

April E. Frantz
NR Reviewer/Eastern Region

enc.