

NATIONAL ARCHITECTURAL AND ENGINEERING RECORD
DUCK CREEK MILL

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CONTENTS

	Page
 Written Descriptions	
Historical Information	2
Architectural Information	5
 Sources of Information	
Bibliography	14
 Graphics	
Figure 1. Duck Creek Mill, first floor plan showing Phases I through V.	15 15a
Figure 2. Duck Creek Mill, basement floor plan showing extant drive train and line shafting	16 16a
 Photographs	
Plate 1:	17
Plate 2: Duck Creek Mill, Northwest Elevation	18
Plate 3: Duck Creek Mill, Southwest Elevation	19
Plate 4: Duck Creek Mill, West Elevation of Phase III Link Between the Earlier Free-Standing Mills	20
Plate 5: Duck Creek Mill, Southwest Elevation of Phase I Structure Showing Twentieth-Century Dormer Window and Extended Eaves	21
Plate 6: Duck Creek Mill, Head Race and Turbine Housing with Husk-Framing Bearing Direct-Drive Gear Train and Line Shafting for Belt Drive	22
Plate 7: Duck Creek Mill, Turbine Housing and Husk-Framing Under Phase III Structure	23

CONTENTS (Cont'd.)

Plate 8:	Duck Creek Mill, Interior Phase I Basement Level Showing Belt Driven Electric Generator in Southeast Corner	24
Plate 9:	Duck Creek Mill, "Western Corn Sheller" and Corn Bin, Interior First Floor of Phase I Structure	25
Plate 10:	Duck Creek Mill, Interior Second Floor of Phase I Structure. Note Summer Beam, Sansom Post and Pillow Construction Supporting Third Floor Joists and Flooring. In the Background Note the Corn Bin to the Left and Bank of Grain Elevators to the Right	26
Plate 11:	Duck Creek Mill, Interior Second Floor of Southeast Corners of Phase II and III Structures. Framing is Primarily of Reused Timbers Reworked at Various Times Throughout its History	27
Plate 12:	Duck Creek Mill, Interior Attic Level of Phase I Structure. Note the Three Sets of Rafter Blades In Center Background and the Use of Collar Beams with Half-Dovetail and Half-Lapped Joints. In the Left Foreground Note the Head Arrangement for the Extant Bank of Grain Elevators	28

NATIONAL ARCHITECTURAL AND ENGINEERING RECORD

DUCK CREEK MILL

Location: The Duck Creek Mill is located in the Duck Creek Village and the Lindens Historic District on the east side of Delaware Route 65 and the south side of Duck Creek in Duck Creek Hundred, Kent County, Delaware.

Present Owner: Bureau of Museums
Delaware Division of Historical and Cultural Affairs
Hall of Records
Dover, Delaware 19901

Present Occupant: None

Present Use: Vacant

Significance: Listed in the National Register of Historic Places on February 1, 1972, Duck Creek Mill is one of the last remaining structures associated with the now-vanished rural commercial and industrial enclave of Duck Creek Village (also known as Salisbury). Founded as a local milling and grain-trading center in the early 18th century, the Duck Creek Village community at one time included several dwellings, a store, two blacksmith shops, a grist-mill and sawmill (Duck Creek Mill), and the miller's house (The Lindens).

Part I. HISTORICAL INFORMATION

A. Physical History

1. Dates of erection: Begun late in the first quarter of the 19th century, the Duck Creek Mill received numerous varied and substantial alterations throughout its history until its closing in the mid-20th century. The main brick structure dates from the earliest period of 1820 to 1830 and was enlarged with a separate structure probably housing the sawmill in the mid-19th century. Late 19th-century changes included a two-story grain bin and a one-story shed wing running around the north, west and south elevations of the two milling operations which had been joined under a single roof by a two-story frame link erected over the head race and turbine housing. Twentieth century additions included a shed wing off the east elevation of the sawmill a large dormer window cut into the west roof elevation of the original block, and the erection of a separate one-story storage building.
2. Architect: While the Duck Creek Mill appears to have been originally commissioned by Richard Holding in the early 19th century and modified in the course of later ownerships, the names of the millwrights, mechanics, carpenters, and masons remain unknown.
3. Original and Subsequent Owners: The first recorded owner of the Duck Creek Mill was Richard Holding, who died in 1837. The mill had apparently been in the Holding family since its establishment, as there is no prior record of land transactions involving the Holdings at that location. William H. Holding inherited the mill in 1837 and immediately sold half of the operation, said to have included a three-run (three sets of millstones) operation and a water sawmill to William J. Clarke for \$5,301. The purpose of this transaction seems to have been to raise cash to satisfy Richard Holding's creditors and to gain clear title to the mill, because William Holding bought the mill back from Clarke for the same amount and on the same day as the previously described conveyance. That Richard Holding's creditors were not fully satisfied for some time is indicated by two sheriff's sales in 1843 to William F. Corbett and to James Leatham for outstanding debts owed by Holding. In 1843 William H. Holding also purchased two lots situated in Duck Creek Village from Samuel H. Holding for \$500. These may be the same two parcels that were sold in turn to Corbett and Leatham. In 1860 the Duck Creek Mill operated by Holding employed two mill hands and utilized a wood-fired steam engine. The average monthly product at that time was 1100 bushels of flour and 3000 bushels of cornmeal valued at a total of \$9,500.

In March of 1864 Ann L. Holding, widow of William H. Holding and acting on behalf of his minor children, sold the Duck Creek Mill by a private act of the Delaware Legislature, dated March 24, 1864, to Robert Denney. The sale was advertised in The Delawarean and held at the hotel of Charles E. Foxwell in Smyrna. It netted nearly \$132,000 for the mill and a total of almost \$12,250 for three additional parcels of land.

Under Denney's stewardship the mill operated four runs of millstones powered by a thirteen-horsepower steam engine and an eight-foot diameter water wheel and produced an average of two hundred bushels of flour and cornmeal per day. In 1890, the mill was sold at sheriff's sale to Henretta D. Denney for a sum of \$7,000 to settle a debt of \$3,589.21 owed by Robert Denney to the National Bank of Smyrna.

On January 1, 1910, Henretta D. Denney, the widow of Robert Denney, sold the mill to Robert H. Denney for \$2,000. The deed describes the mill as including "all the mills, mill seat, mill right, machinery, mill race, mill dam, mill pond, also all the lands covered with the waters of the said pond, and the mill gate and all appurtenances." In 1915 Robert H. Denney and his wife Martha sold the mill to Samuel A. Fortner. Fortner then sold the mill 18 years later to Helen Golt for a sum of \$600. On August 9, 1939, Helen Golt and Howard Golt conveyed the Duck Creek Mill to Samuel Weigel, Jr., for a price of \$700.

In September of 1960, the Superior Court of Delaware ordered the mill sold at sheriff's sale to satisfy debts incurred by Samuel and Ethel A. Weigel, Jr., for \$30,000 from the Equitable Security Trust Company, which is now a part of the Bank of Delaware. While the mill brought only \$15,000 from Lucian T. Jones, it was described in some detail as containing: "1 mill (80' by 100'), 1 Office, 2 warehouses (20' by 30'), 1 warehouse (30' by 80'), 1 grain elevator (60' by 24'), 1 drier building (8' by 16'), 1 storage building (8' by 16'), together with all items of equipment and machinery embedded in the said lands and premises and attached to the buildings located thereon and used in connection therewith to conduct a grain and milling business." On June 13, 1968, Lucian T. Jones sold the mill to the State of Delaware for \$20,000.

Summary of Original and Subsequent Owners

References to the chain of title to the land upon which the structure stands are in the Hall of Records, Dover, Delaware, and contained in the Kent County/Grantor Indices and Deed Books.

- 1837 Deed, October 4, 1837, recorded in Volume L 3, page 210.
William H. Holding, Administrator for the estate of Richard Holding, to William J. Clarke, half interest.
- 1837 Deed, October 4, 1837, recorded in Volume L 3, page 212.
William J. Clarke to William H. Holding, half interest.
- 1843 Deed, February 24, 1843, recorded in Volume \$ 3, page 144.
Samuel H. Holding to William H. Holding, two additional lots located in Duck Creek Village.
- 1864 Deed, March 26, 1864, recorded in Volume X 4, page 3.
Ann L. Holding for minor children to Robert Denney.

- 1890 Deed, May 19, 1890, recorded in Volume E 7, page 466.
Robert Denney to Henretta D. Denney, at sheriff's sale.
- 1910 Deed, January 1, 1910, recorded in Volume V 10, page 120.
Henretta D. Denney, widow of Robert Denney, to Robert H. Denney.
- 1915 Deed, January 13, 1915, recorded in Volume T 10, page 393.
Robert H. and Martha A. Denney to Samuel A. Fortner.
- 1933 Deed, July 5, 1933, recorded in Volume N 14, page 59.
Samuel A. Fortner to Helen Golt.
- 1939 Deed, August 9, 1939, recorded in Volume O 15, page 278.
Helen and Howard Golt to Samuel Weigel, Jr.
- 1960 Deed, September 15, 1960, recorded in Volume N 22, page 387.
J. Wesley Walls, Sr., Sheriff, to Lucian T. Jones.
- 1968 Deed, June 13, 1968, recorded in Volume M 31, page 454.
Lucian T. Jones to the State of Delaware.

4. Original Plans and Construction: As originally built in the early 19th century, the Duck Creek Mill was a two-story brick structure of square proportions, measuring 32' by 31', and having a full attic and a full banked basement level housing the husk framing, a drive train running the operations. The brickwork, laid in five-course common bond, rested on a rubble stone foundation defining the basement level. The common-rafter roof with half-dovetailed and half-lapped collar beams was covered with wood shingle nailed to sawn nailing lath. The interior of the structure was unpartitioned with large open spaces for the milling operations. An open stair was located in the northeast corner of all floors leading from the basement to the attic.

5. Alterations and Additions: Including the original brick core, the Duck Creek Mill contains at least five phases of additions and major structural modifications. The first major addition dates from the mid-19th century and was a frame two-story wing set atop a full basement of brick construction laid in five-course common bond. This wing was located on the south side of the race across from the grist and flour mill and was possibly the housing for the sawmill described in 1837 and built to utilize the power and drive systems already in place. In the later 19th century the space between the two structures was infilled with a two-story frame connection, and around the turn of the century a one-story, balloon-framed, lean-to addition was erected around the north, west and south elevations. In the course of these later changes to the building, major elements of the brick structure were removed and the superstructure of the sawmill completely rebuilt to create an even larger open interior work space. At the same time the drive system for the mill was replaced at least twice: once in the mid-19th century when a steam engine was installed, and again when the engine was removed and a water turbine and electric generator were set in place. Mid-20th century additions include the raising of the roof on the original brick core with a large gable-fronted dormer window on the west face of the roof

and the construction of a balloon-framed and corrugated metal-sided shed addition off the east elevation of the sawmill and a detached shed of similar construction abutting the north wall of the shed addition. These changes, designated Phase I through Phase V, are fully described in Part II.

B. Historical Context

The Duck Creek Mill was erected in the early 19th century as part of Duck Creek Village--a small milling community described in Scharf's History of Delaware as being laid out by Benjamin Shurmer, a Quaker farmer, prior to 1718. At the time of Robert Holding's occupation, the community included three stores and a blacksmith shop run by a free black. At the time of Scharf's description the village contained the mills, two blacksmith's shops, a brick store and sixteen dwellings with a resident population of approximately eighty persons (pp. 1093-1094).

In 1968, the property was acquired by the State of Delaware and, in 1972, was listed in the National Register of Historic Places as a district containing the brick, 18th-century miller's house known as The Lindens, the mill, and a small plank house moved onto the property in 1961.

The mill, with its numerous and substantial changes, clearly documents the rise and decline of rural milling operations through the 19th and 20th centuries. What was once a viable rural industry incorporating varied mechanical and milling operations became obsolete in the mid-20th century and was stripped of nearly all its mechanical systems, leaving the building as a conglomeration of successive additions in a relatively isolated location with little promise for adaptive use.

Part II. ARCHITECTURAL INFORMATION

A. General Statement

1. Architectural character: The Duck Creek Mill is characterized by numerous architectural and mechanical changes dating from the first period of construction in the first quarter of the nineteenth century through its abandonment and subsequent deterioration. As the mill now stands, it describes a series of major structural and additive changes. Comparatively little architectural information survives from the earliest milling operation, and almost no equipment remains from any time in which the mill operated as a rural industrial enterprise. With altered rooflines and floor plans, the Duck Creek Mill is now a rambling series of open spaces defined by reused building elements and little of its once apparently extensive mechanical systems.

2. Condition of fabric: Non-operational and empty for approximately twenty years, the Duck Creek Mill has reached an advanced stage of structural deterioration. With most of the wood shingle roof weathered away compounded with radical structural changes made during the mill's working history, the building has suffered significant damage to the point of being unsafe. A large dormer window over the southern section of the building has collapsed with one cheek falling into the structure and the other lying on the west slope of the roof. Large portions of the masonry foundations for the two earliest phases of the mill, including the walls flanking the power system, have been removed and the structural load for the fabric of the building transferred to vertical timber posts supporting roughly joined girders. With much of the roof open to the weather, the interior has suffered major rotting, not only of the floors but also of structural members such as joists and summer beams.

B. Description of Exterior

1. Overall Dimensions: The overall demensions of the Duck Creek Mill are approximately 102' by 44'. The plan of the building, however, contains a number of discrete spatial units (numbered I to V in Figure 1). Phase I was a two-story brick structure of about 31' by 32'; Phase II was a smaller one- or two-story timber-framed structure measuring nearly 24' by 22'; and Phase III a framed-in link between I and II, 31' deep and 13'6" wide. Phases IV and V enlarged the mill to its present size.

2. Foundations

Phase I: The first period structure composing the Duck Creek Mill rests on an uncoursed rubble stone masonry foundation defining a full cellar. The west wall is slightly banked uphill to where the original race ran beside the south gable of the structure. Late changes in the power and drive systems of the operation required the removal of more than three-quarters of the southern foundation wall and the transfer of its load-bearing capacity to a composite girder composed of four 2 1/2" by 7 1/2" circular-sawn timbers fastened together with large wire nails. The mid-section of the girder is carried by the end of the belt drive and turbine husk framing. The southeastern corner of the building is further braced with a battered wood-form cast-concrete buttress rising from the outside edge of the tail race. The three remaining foundation walls, originally laid in lime-based sand and gravel-tempered mortar, have been repeatedly repointed and parged both inside and out. The basement floor of the first period structure and all subsequent additions appear to have been first of packed earth with later sections being finished with poured concrete. All structural posts throughout the basement area have been reinforced with concrete, stone, or masonry pads.

Phase II: The second period foundation, located along the south bank of the race system, is a brick construction laid in five- and six-course common bond. The locally fired brick includes some random glazing and

is laid on a lime-based sand-tempered mortar. Both the north and south gable-end foundations defining the basement have been removed to accommodate now-vanished line shafting for the belt-drive operation of the mill. The load-bearing capabilities of the north wall have been transferred to an 8 by 9 1/2" circular-sawn pine girder laid flat with a lapped-scarf joint over the eastern-most of the two timber posts supporting the span. The framed structure of the south gable-end is now carried by a four-board composite girder identical to that spanning the south gable-end of the first-period structure and borne on a single 1' by 1' 5 1/2" concrete pylon.

Phases III, IV and V: Other elements of the mill structure radiating around the first and second period structures are carried on cast concrete or concrete block pylons or piers, except for the northern shed additions, which rest on concrete block piers set atop a continuous cast-concrete foundation rising to an uneven height of two to three feet. The cast-concrete penstock and drive system foundations and footings are described in section 6.

3. Walls

Phase I: The first period structure was of brick construction laid in five-course common bond and sets in lime-based sand-tempered mortar rising two stories and a full attic above the basement level. While the east and north elevations have remained largely unaltered, the entire south gable end has been removed and framed in on principle posts bearing the ends of summer beams formerly set in the masonry wall. The west facade has been largely removed at the first floor level, with the second floor masonry now carried on two iron eye beams bedded into the surviving southwest and northwest masonry corners of the mill and additionally braced with a 1' by 5" straight-sawn pine post at the approximate center of the span. Although the east wall remains as exposed brick, the west wall has been painted and, at the second floor level, covered with sawn weatherboard. The north wall remains as built, but is covered with frame additions nearly to the height of the gable peak.

Phase II: The second period structure, which at first stood independently of the brick wall, is of braced-frame construction. Although the majority of the timber has been reused or relocated within the mill, second period fabric stands out as being composed of mechanically sash-sawn timber fastened with full mortise-and-tenon joints and pinned together. This section was of post-and-rail construction designed for vertical-board siding, but at a later date suffered the removal of all but the most essential first floor framing and the studding of the second floor level with circular-sawn scantling and reused common rafter sections for seating the weatherboard applied throughout the entire structure. The principal framing system was reinforced with post-to-girt and post-to-plate sway bracing, most of which is vertically sawn, although at least one member, possibly a replacement, located in the original southeast gable corner, is circular sawn. Mortise patterns

indicate in the south gable end the former presence of a single, ground-floor window opening and in the west facade a single door and sidelight arrangement. Structural changes dating to the late period of this section include the introduction of a three-board composite girder composed of 6 1/2" by 2" planks carried at either end by 4 1/2" by 6 1/2" by 2" planks carried at either end by 4 1/2" by 6 1/2" circular-sawn posts and in the center by two evenly spaced circular timber posts. All joists have been either reused or replaced. Finally, the north gable end is almost completely rebuilt of circular-sawn, braced-frame elements, with sway bracing running upwards in a manner similar to the earlier period fabric.

Phases III, IV and V: The remaining walling, including the framing for the shed addition running around three-quarters of the building, is of dimension-sawn 2 by 4" wire-nailed framing clad with whitewashed, rabbeted-edged and lapped, millsawn weatherboard and red board framed openings. A more recent 20th-century shed addition off the east wall of the second period structure is of stud-and-rail construction covered and roofed with galvanized corrugated metal sheeting.

The space between the first and second period structures is framed in with joists running between the two buildings and at a right angle to their joist arrangements. Again, the majority of the material here is reused, except for the 2" x 4" dimension-cut and weatherboarded stud walling of the east elevation infilled between the buildings.

4. Structural System: Framing

Phase I: The first floor structural framing within the masonry structure consists of hewn and pit-sawn joists ranging from 9" by 6" to 1' by 7-1/2" timbers bedded in the masonry walls. Spanning half the width of the mill, the ends of the joists are lapped or laid over a 9" by 10" summer beam laid flat and supported at midpoint by a 9" by 9" 'sansom' post and capped with a timber pillow or cushion. Repairs in the masonry where the joists enter the wall, as well as evidence of joining scars in the massive first-floor joists, suggest they are replacements employing recycled timbers from the earlier pre-turbine husk-and-millstone framing.

The second floor and cellar framing systems are based in the same structural periods as the first or main floor. On the second floor the joists were mechanically, vertically-sawn 9" by 3-1/2" timbers on approximate 2' centers, with one end bedded in the masonry and the other carried by the summer beam.

The basement framing consists of hewn as well as a few simply flattened unbarked logs averaging 11" by 7" and set on approximate 2' centers. These are supported in the same manner as the upper floors. Only eight of these timbers survive in the north gable end against the east wall, and only six against the west wall. All other framing has been replaced with variously sized circular-sawn timbers set on 2-1/2 to 3-foot centers.

Phase II: All original internal framing has been removed at all levels from the second-period mill. Mortise scars indicate the original joists ran on an east-west axis but have been rearranged to run north-south. All basement joists are circular sawn, 7-1/2" by 2-1/2" planks set on edge on rough 1' 9" centers. The joists are supported by previously described girders at either end, as well as two additional post-supported composite girders of three 7-1/2" by 2-1/2" planks equally situated across the mill.

The first and second floor internal framing system for the second period structure and frame skirt has been previously described in Section B 3.

5. Porches

A one-story shed roof enclosed porch runs along the full length and gable depth of the area described by the total area and infill of the first and second period structures. The dimension-sawn lumber framing is fastened together with wire nails and covered with a common rafter system lapped over a two-board composite plate. The rafter ends are boxed in with a plain cornice. The entire shed arrangement is randomly pierced by hinged or sliding vertical board-and-batten doors and six-over-six light sash framed in milled, unornamented architraves painted red. The porch or shed area is sheathed with milled weatherboard.

6. Chimneys

There is no evidence for any chimney or stove flue arrangement throughout the structure.

7. Openings: Doorways and Windows

There are no original doorways and few window openings remaining on the main floor in either the first or second period structures. There are, however, two original window openings and a doorway in the east wall of the second period mill basement and a doorway in the east wall of the first period mill basement, as well as several original window frames scattered throughout the building. All that remains of the first period doorway is the opening itself and what appears to be a replaced timber lintel reset in the stone masonry. The first period windows are composed of mortise-and-tenon framed architraves with flat sills and lightly beaded fascia applied around the entire frame of 4" by 4-1/2" timbers with mitred corners at the bead and fixed with cut nails. All first period windows had six-over-six lights sash with ogee moldings enframing the individual lights. An additional window-like opening pierces the west wall of the southwest corner of the building. Framed with an undecorated mortise-and-tenon architrave of 2" by 3-1/2" members capped with a load-bearing lintel, the opening served as a service portal of unknown function.

8. Roof

The roof of the mill now presents an irregular series of connected gable elements with their ridges running along a north-south axis. The entire structure is covered with wood shingle nailed to evenly-spaced shingle laths. Where the gables rise above the adjoining unit in Phases I, II, and III, the roof line exhibit projecting eaves. Each section of the main roof is also finished with a plain unornamented boxed cornice formerly painted red. The roof framing for the Phase I structure is a common rafter arrangement braced by lapped, half-dovetail collar eaves, with the rafter feet notched over a false plate carried on the joist ends projecting beyond the vertical plane of the wall, and joined at the ridge with a lapped and pinned joint. In the later history of the mill several of the collars were removed and the rafters along the west slope of the roof lifted to a horizontal position to frame in a large two-bay gabled dormer window illuminating the attic work space. The roof framing for Phases II and III is of mill-sawn lumber with the jointure of the common rafters at the ridge and at the plate nailed in place. A later dormer window in the west slope of the Phase II structure has collapsed and fallen into the structure.

C. Description of Interior

1. Floor Plans:

a. Basement level. The basement level of the Duck Creek Mill is banked along the western elevation and straddles the head and tail races where they enter and exit the structure. The first and second phases of the building are defined by common bond brick walls and contain the remnants of the belt drive system of line shafting that conveyed power to all stages of the milling operation. The south gable end of the Phase I basement facing the turbine housing has been removed, and both the north and south gable ends of the Phase II building have been demolished. The mechanical systems surviving in the basement level are described in Section C-6.

b. First and second floors: Through the process of addition and selective demolition, the interior of the Duck Creek Mill is now a single, large open work space with a semi-enclosed area in front at the Phase I structure and a storage shed and grain bin located along the north elevation.

c. Attic level: The full attic of the Phase I structure is also an open work space which has been enlarged through the addition of a large two-bay dormer window in the west slope at the roof.

2. Stairways: The only surviving stairway in the Duck Creek Mill is an open tread and string arrangement leading from the interior northeast corner of the Phase I mill to the upper floors. At the second floor level is a chamfered newel and hand rail. Although the stair is not original to the building, it occupies the same position as the first

stair and is evidenced by joining and flooring scars. While the original stair led from the basement to the attic, the present arrangement rises only from the first floor to the attic. There are no other extant stairways in the structure.

3. Flooring: Where the floors of the Duck Creek Mill have not weathered through, their construction appears to be of two types. In the Phase I Mill the original flooring in the second and attic levels is composed of random width sash sawn lumber one inch thick. Throughout the rest of the building the flooring is of narrow width, one-half to three-quarter inch boards. In both cases the type of wood is difficult to determine due to deterioration and heavy staining from the building's industrial usage.
4. Wall and Ceiling Finish: In the first-period structure the interior walls were finished with plaster applied directly to the surface of the brick walling. The attic level was also finished with horizontal board knee walls to contain grain in the process of being milled. All other interior walls and all ceilings throughout the building are unfinished.
5. Openings: No original interior openings survive in the Duck Creek Mill. Interior window trim has been described in section B-7.
6. Mechanical Systems: Although largely gutted of its grinding machinery, the Duck Creek Mill still contains some machinery of note. In the space framed in between the first and second construction periods of the structure stands an early-20th-century form cast concrete headstock containing the submerged remains of the metal water turbine that powered the mill in its final phase of operation. A bevel-edged cast iron wood-toothed driving gear is mounted on the vertical iron shaft of the turbine approximately four feet above the plank-floored top of the turbine housing. The driving gear meshes with a second vertically-mounted, bevel-edged, cast iron gear translating the revolutions of the turbine to vertical revolution of several cast iron belt wheels mounted on a common shaft with the second gear. This arrangement, mounted in the basement of the Period I structure, transmitted power to a four shaft bank of plank grain elevators cycling in a continuous movement to the attic of the building. Belt drive was also supplied to a "Western Corn Sheller" on the first floor and, through the gearing upwards via a second shaft of belt wheels in the basement, to an electric generator that produced electricity for the mill. The only other milling-related item in the Duck Creek Mill is a small buhr taken from a self-contained belt-driven grist mill and placed as a footing beneath a later husk frame post in the basement of the Period I structure.

All evidence of grinding, bolting, sifting and packing machinery, as well as of additional grain elevators, drive systems, and associated machinery, have been removed from the building.

D. Site

1. General Setting and Orientation: The Duck Creek Mill is situated on a rough north-south axis fronting Delaware Route 486. Duck Creek, flowing west to east, passes by the mill to the immediate north with the race coming off the creek as a spur and entering the mill through a head race located approximately at the midpoint of the west elevation. The tail race exits from the mill at a comparable point in the east elevation and feeds back into Duck Creek.
2. Historic Landscape Design: The Duck Creek Mill originally stood at the heart of a small trading center known as Duck Creek Village or Salisbury. All that remains of the community is the mill and the miller's house, known as the Lindens. Of additional note, however, is the fact that the mill and its immediate environs stood in the larger context of the 18th and 19th-century grain trade that employed Duck Creek as a primary thoroughfare. The only other structure in the area relating to this trade is the Brick Store (N-135), an 18th-century water-oriented granary, located west of Smyrna in Blackbird Hundred, New Castle County.
3. Outbuildings: The single remaining outbuilding associated with the Duck Creek Mill is a mid-20th-century, balloon-framed, and metal-sided storage shed.

SOURCES OF INFORMATION

Sources of Information

Part I. BIBLIOGRAPHY

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Figure 1: Duck Creek Mill, first floor plan showing
Phases I through V.

- a. "Western Corn Sheller"
- b. corn bin chute from second floor
- c. grain elevators
- d. summer beam locations

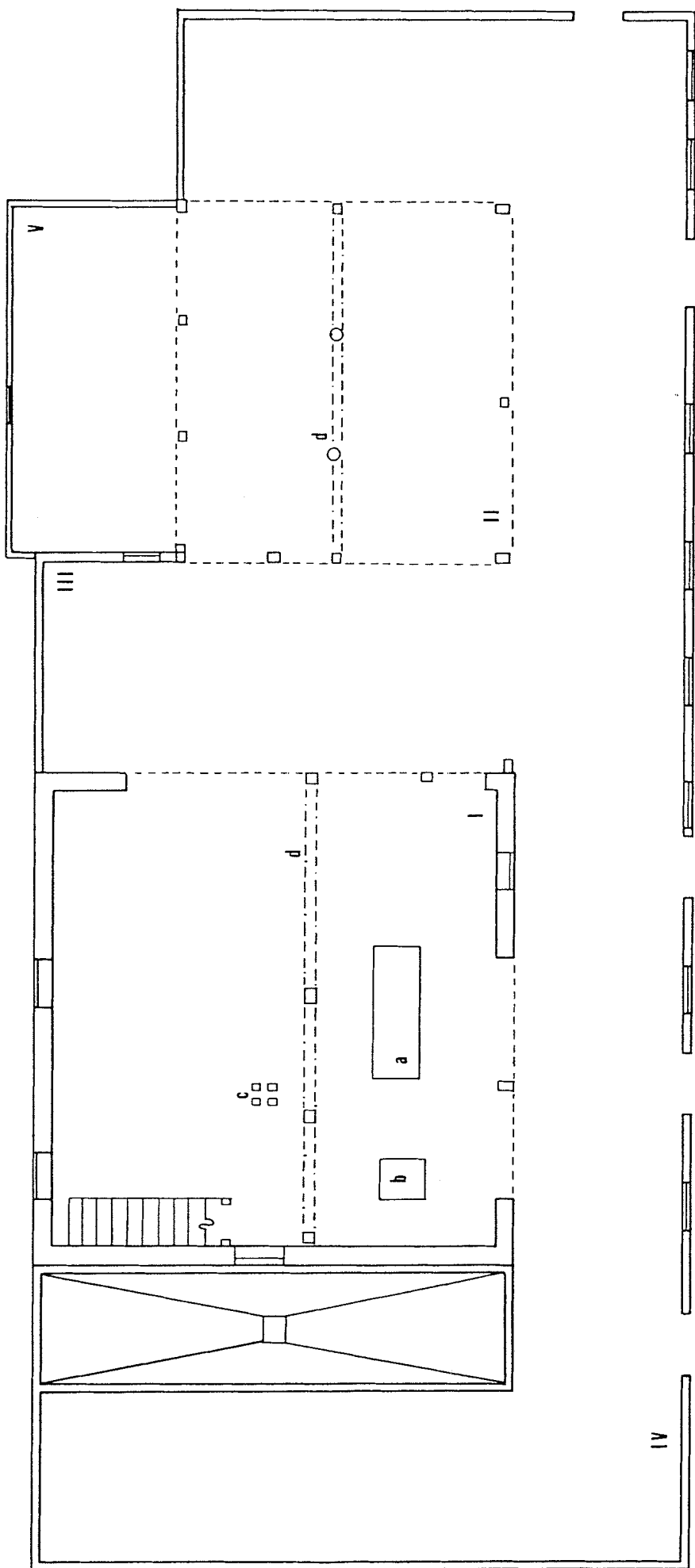


Figure 2: Duck Creek Mill, basement floor plan showing extant drive train and line shafting.

- a. turbine housing
- b. head race
- c. tail race
- d. head gear
- e. line shafting with belt wheels
- f. electric generator

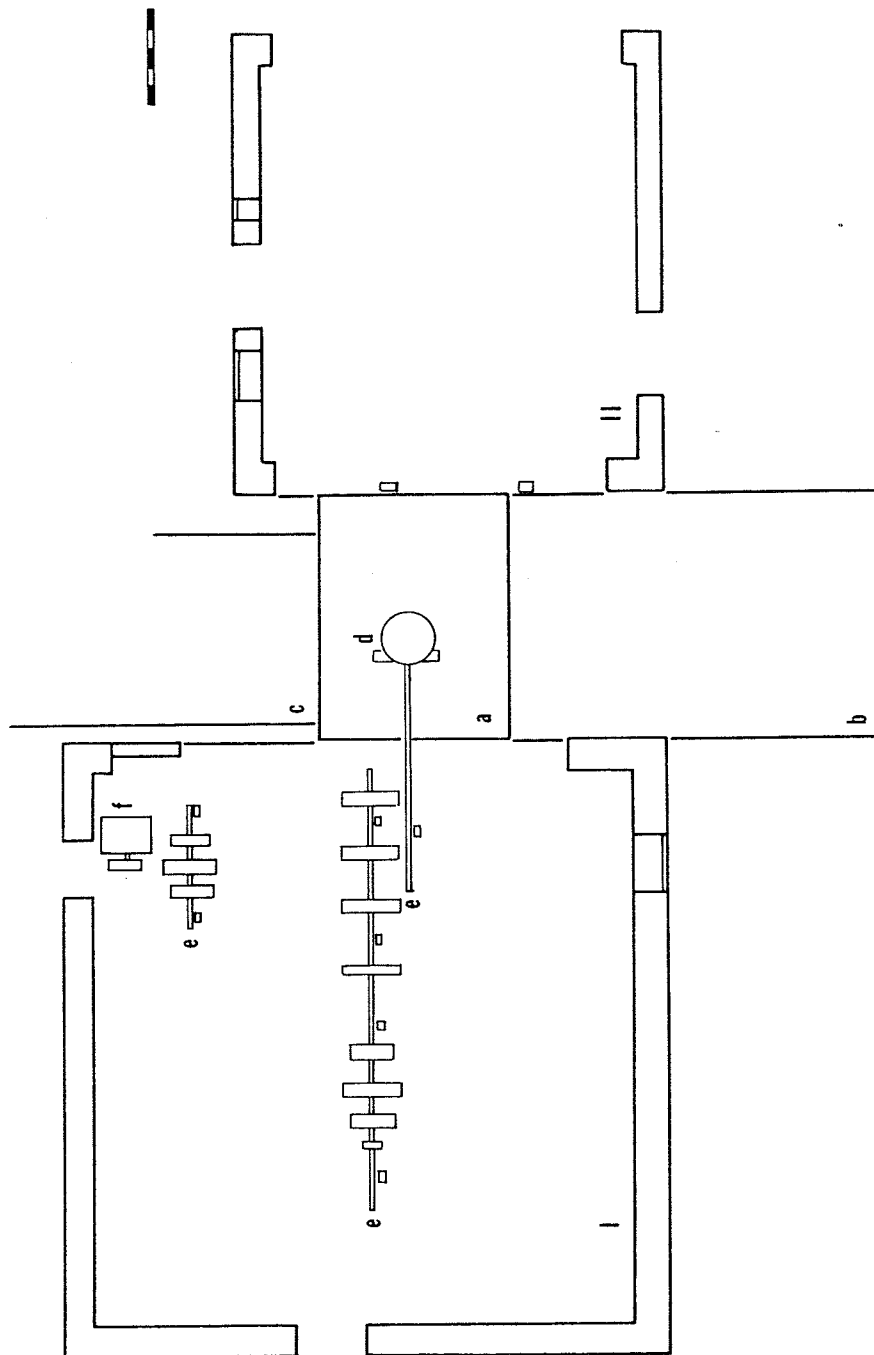


PLATE 1: DUCK CREEK MILL, WEST ELEVATION



PLATE 2: DUCK CREEK MILL, NORTHWEST ELEVATION



PLATE 3: DUCK CREEK MILL, SOUTHWEST ELEVATION

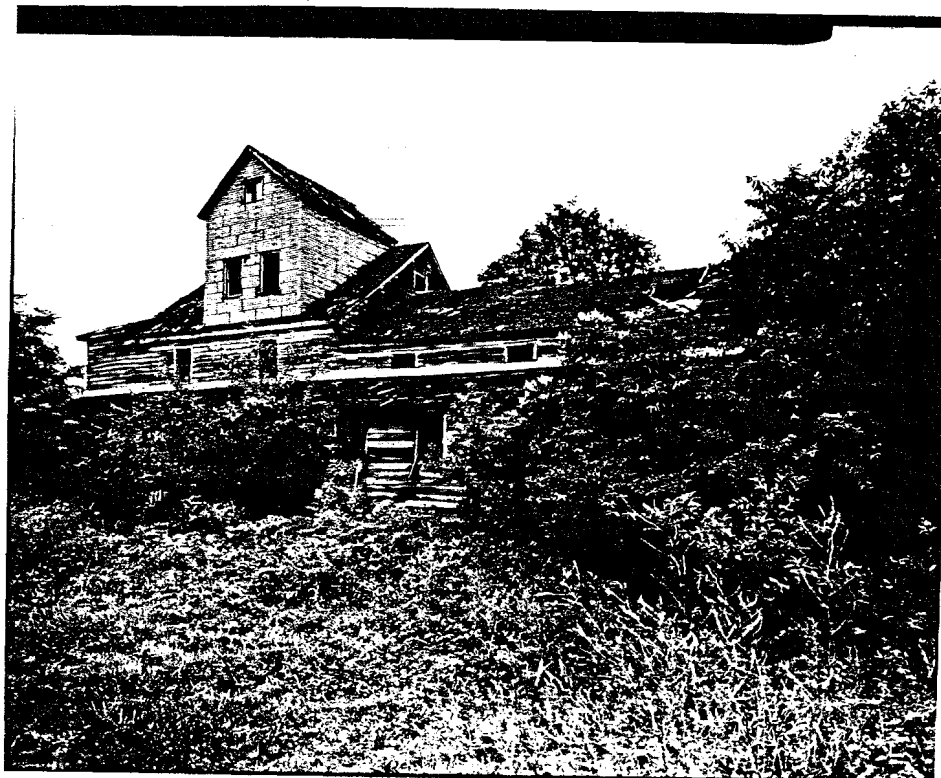


PLATE 4: DUCK CREEK MILL, WEST ELEVATION OF
PHASE III LINK BETWEEN THE EARLIER FREE-STANDING
MILLS (SEE FIGURE 1)

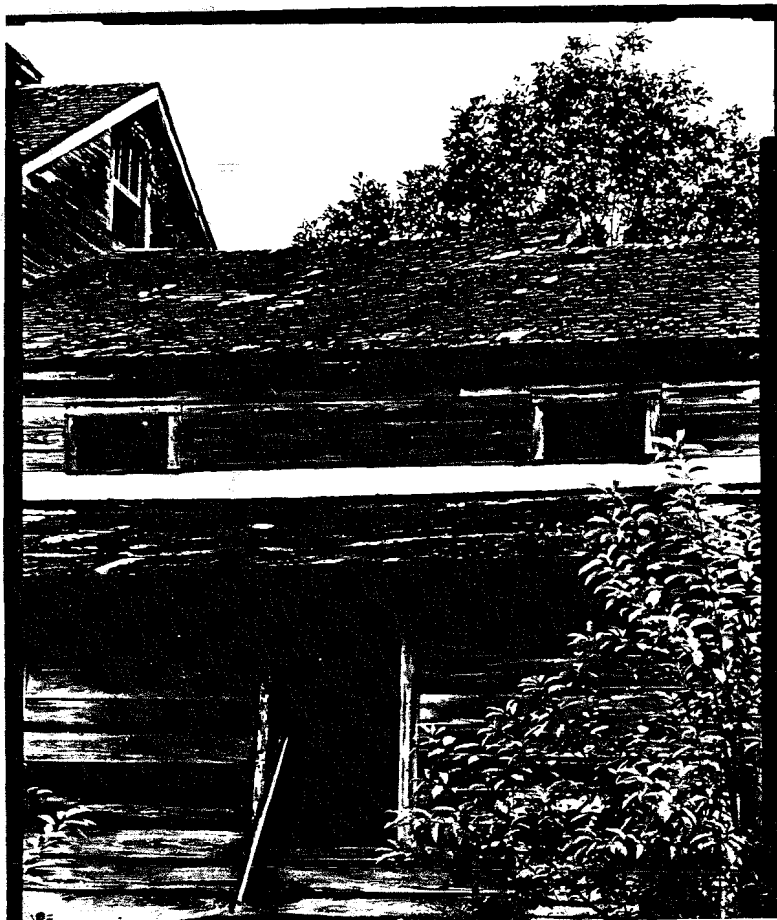


PLATE 5: DUCK CREEK MILL, SOUTHWEST ELEVATION
OF PHASE I STRUCTURE SHOWING TWENTIETH-CENTURY
DORMER WINDOW AND EXTENDED EAVES

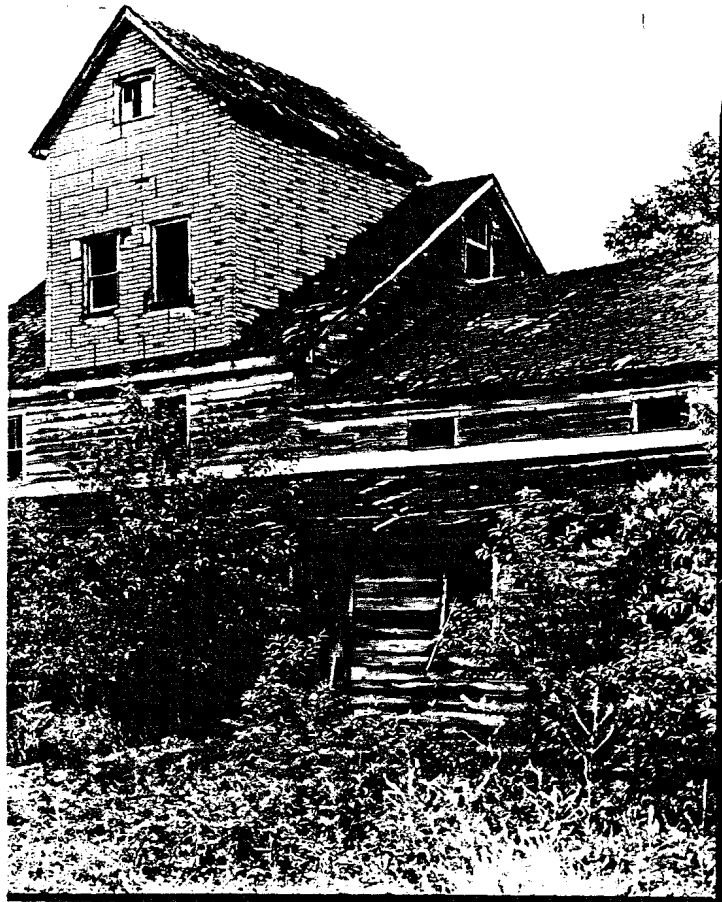


PLATE 6: DUCK CREEK MILL, HEAD RACE AND
TURBINE HOUSING WITH HUSK FRAMING BEARING
DIRECT DRIVE GEAR TRAIN AND LINE SHAFTING
FOR BELT DRIVE

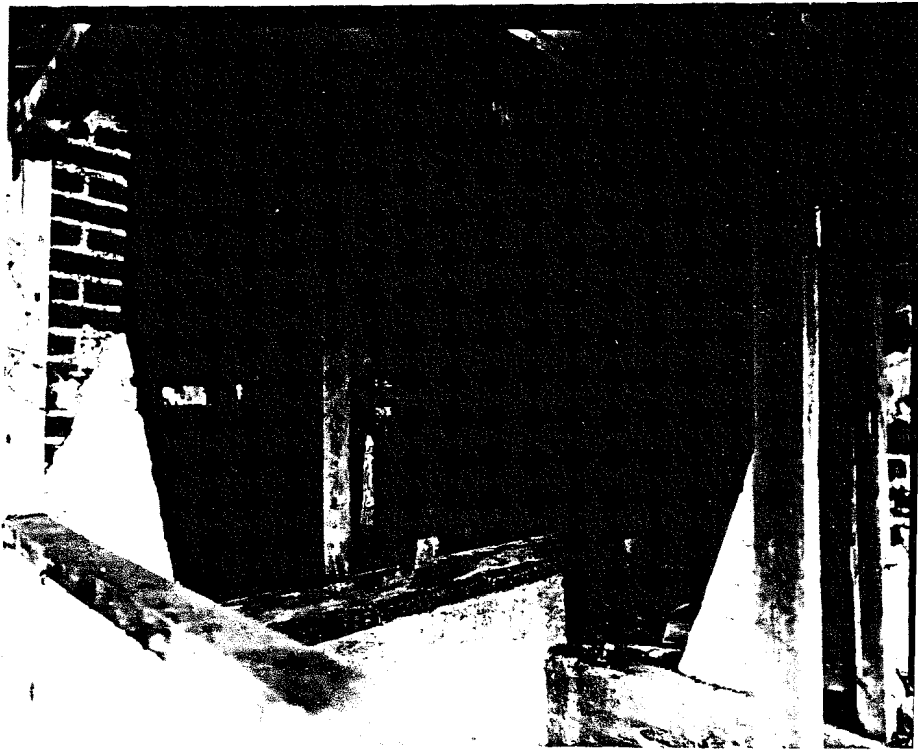


PLATE 7: DUCK CREEK MILL, TURBINE HOUSING
AND HUSK-FRAMING UNDER PHASE III STRUCTURE

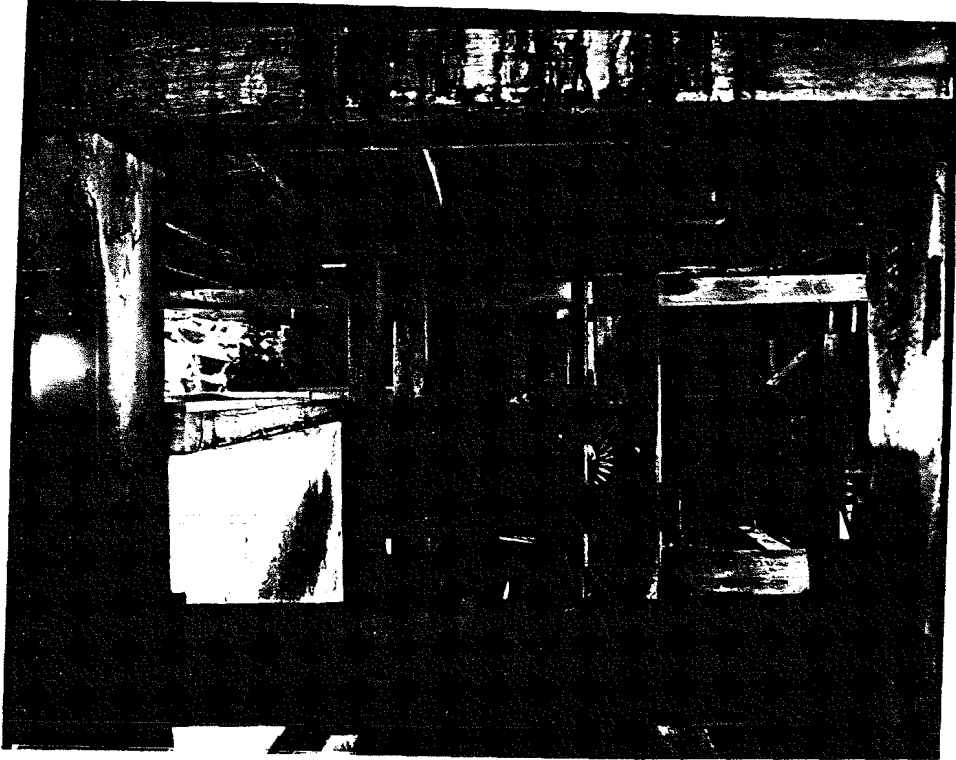


PLATE 8: DUCK CREEK MILL, INTERIOR PHASE I
BASEMENT LEVEL SHOWING BELT DRIVEN ELECTRIC
GENERATOR IN SOUTHEAST CORNER

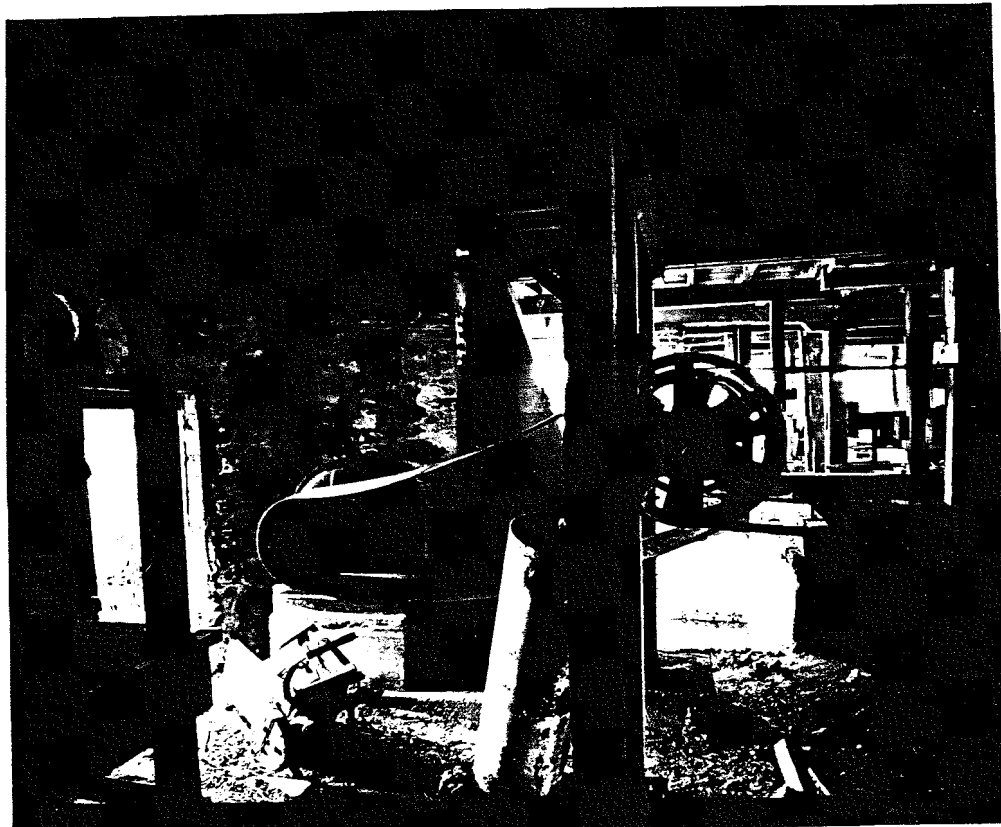


PLATE 9: DUCK CREEK MILL, "WESTERN CORN
SHELLER" AND CORN BIN, INTERIOR FIRST FLOOR
OF PHASE I STRUCTURE



PLATE 10: DUCK CREEK MILL, INTERIOR SECOND FLOOR
OF PHASE I STRUCTURE. NOTE SUMMER BEAM, SANSOM
POST AND PILLOW CONSTRUCTION SUPPORTING THIRD
FLOOR JOISTS AND FLOORING. IN THE BACKGROUND
NOTE THE CORN BIN TO THE LEFT AND BANK OF GRAIN
ELEVATORS TO THE RIGHT

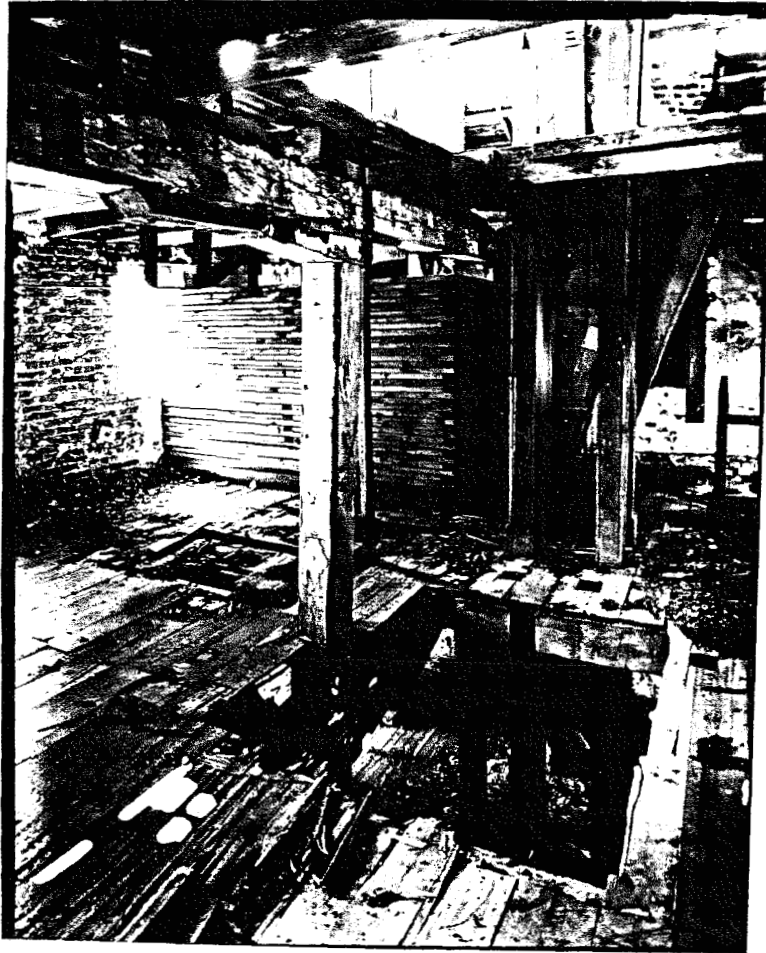


PLATE 11: DUCK CREEK MILL, INTERIOR SECOND FLOOR
OF SOUTHEAST CORNERS OF PHASE II AND III STRUCTURES.
FRAMING IS PRIMARILY OF REUSED TIMBERS REWORKED AT
VARIOUS TIMES THROUGHOUT ITS HISTORY



PLATE 12: DUCK CREEK MILL, INTERIOR ATTIC LEVEL OF PHASE I STRUCTURE. NOTE THE THREE SETS OF RAFTER BLADES IN CENTER BACKGROUND AND THE USE OF COLLAR BEAMS WITH HALF-DOVE-TAIL AND HALF-LAPPED JOINTS. IN THE LEFT FOREGROUND NOTE THE HEAD ARRANGEMENT FOR THE EXTANT BANK OF GRAIN ELEVATORS.

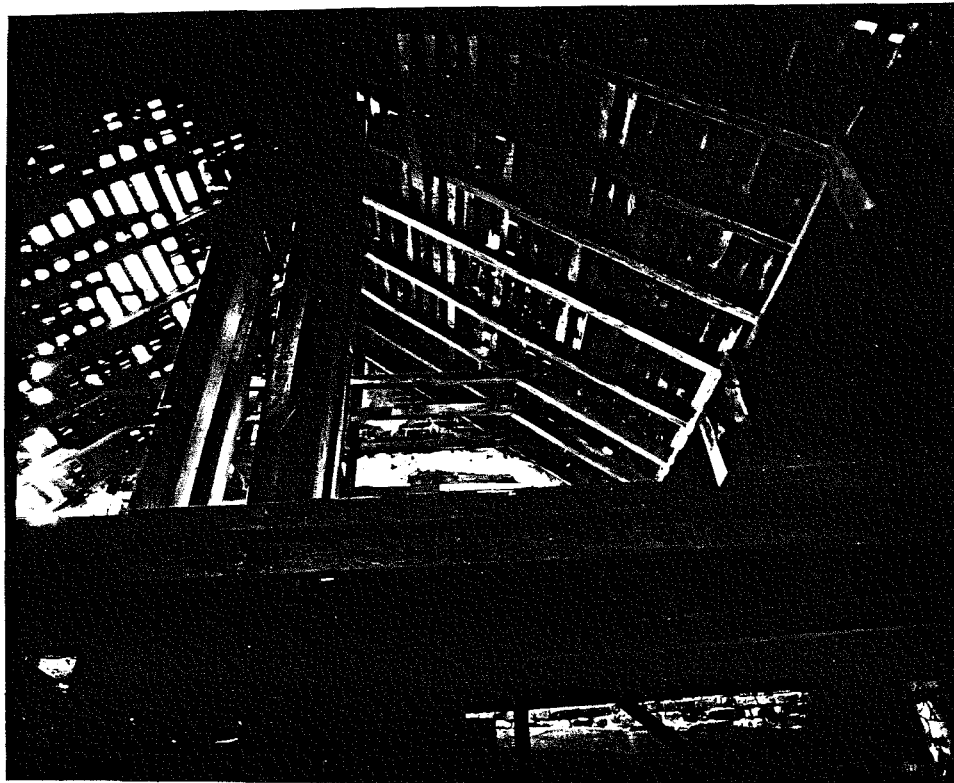


PLATE 2: DUCK CREEK MILL, NORTHWEST ELEVATION

PLATE 3: DUCK CREEK MILL, SOUTHWEST ELEVATION

PLATE 4: DUCK CREEK MILL, WEST ELEVATION OF
PHASE III LINK BETWEEN THE EARLIER FREE-STANDING
MILLS (SEE FIGURE 1)

PLATE 5: DUCK CREEK MILL, SOUTHWEST ELEVATION
OF PHASE I STRUCTURE SHOWING TWENTIETH-CENTURY
DORMER WINDOW AND EXTENDED EAVES

PLATE 6: DUCK CREEK MILL, HEAD RACE AND
TURBINE HOUSING WITH HUSK FRAMING BEARING
DIRECT DRIVE GEAR TRAIN AND LINE SHAFTING
FOR BELT DRIVE

PLATE 7: DUCK CREEK MILL, TURBINE HOUSING
AND HUSK-FRAMING UNDER PHASE III STRUCTURE

PLATE 8: DUCK CREEK MILL, INTERIOR PHASE I
BASEMENT LEVEL SHOWING BELT DRIVEN ELECTRIC
GENERATOR IN SOUTHEAST CORNER

PLATE 9: DUCK CREEK MILL, "WESTERN CORN
SHELLER" AND CORN BIN, INTERIOR FIRST FLOOR
OF PHASE I STRUCTURE

PLATE 10: DUCK CREEK MILL, INTERIOR SECOND FLOOR
OF PHASE I STRUCTURE. NOTE SUMMER BEAM, SANSOM
POST AND PILLOW CONSTRUCTION SUPPORTING THIRD
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VARIOUS TIMES THROUGHOUT ITS HISTORY

PLATE 12: DUCK CREEK MILL, INTERIOR ATTIC
LEVEL OF PHASE I STRUCTURE. NOTE THE THREE
SETS OF RAFTER BLADES IN CENTER BACKGROUND
AND THE USE OF COLLAR BEAMS WITH HALF-DOVE-
TAIL AND HALF-LAPPED JOINTS. IN THE LEFT
FOREGROUND NOTE THE HEAD ARRANGEMENT FOR THE
EXTANT BANK OF GRAIN ELEVATORS.

SAVE for self-defense

*Bernie -
Pat has also
proof-read for
grammar and I have
indicated these
also*

Part I. HISTORICAL INFORMATION

A. Physical History

1. Dates of erection: Begun in the late first quarter of the 19th century, the Duck Creek Mill received numerous varied and substantial alterations throughout its history until its closing in the mid-20th century. The main brick structure dates from the earliest period of 1820 to 1830 and was enlarged with a separate structure probably housing the sawmill in the mid-19th century. Late 19th-century changes included a two-story grain bin and a one-story shed wing running around the north, west and south elevations of the two milling operations which had been joined under a single roof by a two-story frame link erected over the head race and turbine housing. *20th century* additions included a shed *Twentieth* wing off the east elevation of the saw mill, a large dormer window cut into the west roof elevation of the original block and the erection of a separate one-story storage building. *(ar beg. of a sentence)*
2. Architect: While the Duck Creek Mill appears to have been originally commissioned by Richard Holding in the early 19th century and modified in the course of later ownerships, the names of the millwrights, mechanics, carpenters and masons remain unknown.
3. Original and Subsequent Owners: The first recorded owner of the Duck Creek Mill was Richard Holding, who died in 1837. The mill had apparently been in the Holding family since its establishment, as there is no prior record of land transactions involving the Holdings at that location. *space over* William H. Holding inherited the mill in 1837 and immediately sold half of the operation, said to have included a three-run (three sets of millstones) operation and a water saw mill to William J. Clarke for \$5,301. The purpose of this transaction seems to have been to raise cash to satisfy Richard Holding's creditors and to gain clear title to the mill, because William Holding bought the mill back from Clarke for the same amount and on the same day as the previously described conveyance. That Richard Holding's creditors were not fully satisfied for some time is indicated by two sheriff's sales in 1843 to William F. Corbett and to James Leatham for outstanding debts owed by Holding. In 1843 William H. Holding also purchased two lots situated in Duck Creek Village from Samuel H. Holding for \$500. These may be the same two parcels that were sold in turn to Corbett and Leatham. In 1860 the Duck Creek Mill operated by Holding employed two mill hands and utilized a wood-fired steam engine. The average monthly product at that time was 1100 bushels of flour and 3000 bushels of corn meal valued at a total of \$9,500.

In March of 1864 Ann L. Holding, widow of William H. Holding and acting on behalf of his minor children, sold the Duck Creek Mill by a private act of the Delaware Legislature, dated March 24, 1864, to Robert Denney. The sale was advertised in The Delawarean and held at the hotel of Charles E. Foxwell in Smyrna. It netted nearly \$132,000 for the mill and a total of almost \$12,250 for three additional parcels of land.

Henretta
is OK

Under Denney's stewardship the mill operated four runs of millstones powered by a thirteen-horsepower steam engine and an eight-foot diameter water wheel and produced an average of two hundred bushels of flour and cornmeal per day. In 1890² the mill was sold at sheriff's sale to Henretta D. Denney for a sum of \$7,000 to settle a debt of \$3,589.21 owed by Robert Denney to the National Bank of Smyrna. ✓

On January 1, 1910, Henretta D. Denney, the widow of Robert Denney, sold the mill to Robert H. Denney for \$2,000. The deed describes the mill as including "all the mills, mill seat, mill right, machinery, mill race, mill dam, mill pond, also all the lands covered with the waters of the said pond, and the mill gate and all appurtenances." In 1915 Robert H. Denney and his wife Martha sold the mill to Samuel A. Fortner. Fortner then sold the mill 18 years later to Helen Golt for a sum of \$600. On August 9, 1939, Helen Golt and Howard Golt conveyed the Duck Creek Mill to Samuel Weigel, Jr., for a price of \$700. ← is it Henretta or Henrietta

In September of 1960⁴ the Superior Court of Delaware ordered the mill sold at sheriff's sale to satisfy debts incurred by Samuel and Ethel A. Weigel, Jr., for \$30,000 from the Equitable Security Trust Company, which is now a part of the Bank of Delaware. While the mill brought only \$15,000 from Lucian T. Jones, it was described in some detail as containing: "1 mill (80' by 100'), 1 Office, 2 warehouses (20' by 30'), 1 warehouse (30' by 80'), 1 grain elevator (60' by 24'), 1 drier building (8' by 16'), 1 storage building (8' by 16'), together with all items of equipment and machinery embedded in the said lands and premises and attached to the buildings located thereon and used in connection therewith to conduct a grain and milling business." On June 13, 1968, Lucian T. Jones sold the mill to the State of Delaware for \$20,000.

Summary of Original and Subsequent Owners

References to the chain of title to the land upon which the structure stands are in the Hall of Records, Dover, Delaware, and contained in the Kent County/Grantor Indices and Deed Books.

- 1837 Deed, October 4, 1837, recorded in Volume L 3, page 210.
William H. Holding, Administrator for the estate of Richard Holding, to William J. Clarke, half interest.
- 1837 Deed, October 4, 1837, recorded in Volume L 3, page 212.
William J. Clarke to William H. Holding, half interest.
- 1843 Deed, February 24, 1843, recorded in Volume \$ 3, page 144.
Samuel H. Holding to William H. Holding, two additional lots located in Duck Creek Village.
- 1864 Deed, March 26, 1864, recorded in Volume X 4, page 3.
Ann L. Holding for minor children to Robert Denney.

- 1890 Deed, May 19, 1890, recorded in Volume E 7, page 466.
Robert Denney to Henretta D. Denney, at sheriff's sale.
- 1910 Deed, January 1, 1910, recorded in Volume V 10, page 120.
Henretta D. Denney, widow of Robert Denney, to Robert H. Denney.
- 1915 Deed, January 13, 1915, recorded in Volume T 10, page 393.
Robert H. and Martha A. Denney to Samuel A. Fortner.
- 1933 Deed, July 5, 1933, recorded in Volume N 14, page 59.
Samuel A. Fortner to Helen Golt.
- 1939 Deed, August 9, 1939, recorded in Volume 6 15, page 278. 0
Helen and Howard Golt to Samuel Weigel, Jr.
- 1960 Deed, September 15, 1960, recorded in Volume N 22, page 387.
J. Wesley Walls, Sr., Sheriff, to Lucian T. Jones.
- 1968 Deed, June 13, 1968, recorded in Volume M 31, page 454.
Lucian T. Jones to the State of Delaware.

4. Original Plans and Construction: As originally built in the early 19th century, the Duck Creek Mill was a two-story brick structure of square proportions, measuring 32' by 31', and having a full attic and a full, banked basement level housing the husk framing, a drive train running the operations. The brickwork, laid in five-course common bond, rested on a rubble stone foundation defining the basement level. The common-rafter roof with half-dovetailed and half-lapped collar beams was covered with wood shingle nailed to sawn nailing lath. The interior of the structure was unpartitioned with large open spaces for the milling operations. An open stair was located in the northeast corner of all floors leading from the basement to the attic.

5. Alterations and Additions: Including the original brick core, the Duck Creek Mill contains at least five phases of additions and major structural modifications. The first major addition dates from the mid-19th century and was a frame two-story wing set atop a full basement of brick construction laid in five-course common bond. This wing was located on the south side of the race across from the grist and flour mill and was possibly the housing for the sawmill described in 1837 and built to utilize the power and drive systems already in place. In the later 19th century the space between the two structures was infilled with a two-story frame connection, and around the turn of the century a one-story, balloon-framed, lean-to addition was erected around the north, west and south elevations. In the course of these later changes to the building, major elements of the brick structure were removed and the superstructure of the sawmill completely rebuilt to create an even larger open interior work space. At the same time the drive system for the mill was replaced at least twice, *leave as is, we're right* once in the mid-19th century when a steam engine was installed, and again when the engine was removed and a water turbine and electric generator were set in place. Mid-20th century additions include the raising of the roof on the original brick core with a large gable-fronted dormer window on the west face of the roof

and the construction of a balloon-framed and corrugated-metal-sided shed addition off the east elevation of the sawmill and a detached shed of similar construction abutting the north wall of the shed addition. These changes, designated Phase I through Phase V, are fully described in Part II.

B. Historical Context

The Duck Creek Mill was erected in the early-19th century as part of Duck Creek Village--a small milling community described in Scharf's History of Delaware as being laid out by Benjamin Shurmer, a Quaker farmer, prior to 1718. At the time of Robert Holding's occupation, the community included three stores and a blacksmith shop run by a free black. At the time of Scharf's description the village contained the mills, two blacksmith's shops, a brick store and sixteen dwellings with a resident population of approximately eighty persons (pp. 1093-1094).

In 1968, the property was acquired by the State of Delaware and, in 1972, listed in the National Register of Historic Places as a district containing the brick, 18th-century miller's house known as The Lindens, the mill, and a small plank house moved onto the property in 1961.

The mill, with its numerous and substantial changes, clearly documents the rise and decline of rural milling operations through the 19th and 20th centuries. What was once a viable rural industry incorporating varied mechanical and milling operations became obsolete in the mid-20th century and was stripped of nearly all its mechanical systems, leaving the building as a conglomeration of successive additions in a relatively isolated location with little promise for adaptive use.

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Part II. ARCHITECTURAL INFORMATION

A. General Statement

1. Architectural character: The Duck Creek Mill is characterized by numerous architectural and mechanical changes dating from the first period of construction in the first quarter of the nineteenth century through its abandonment and subsequent deterioration. As the mill now stands, it describes a series of major structural and additive changes. Comparatively little architectural information survives from the earliest milling operation, and almost no equipment remains from any time in which the mill operated as a rural industrial enterprise. With altered rooflines and floor plans, the Duck Creek Mill is now a rambling series of open spaces defined by reused building elements and little of its once apparently extensive mechanical systems.

2. Condition of fabric: Non-operational and empty for approximately twenty years, the Duck Creek Mill has reached an advanced stage of structural deterioration. With most of the wood shingle roof weathered away compounded with radical structural changes made during the mill's working history, the building has suffered significant damage to the point of being unsafe. A large dormer window over the southern section of the building has collapsed with one cheek falling into the structure and the other lying on the west slope of the roof. Large portions of the masonry foundations for the two earliest phases of the mill, including the walls flanking the power system, have been removed and the structural load for the fabric of the building transferred to vertical timber posts supporting roughly joined girders. With much of the roof open to the weather, the interior has suffered major rotting, not only of the floors but also of structural members such as joists and summer beams.

B. Description of Exterior

1. Overall Dimensions: The overall demensions of the Duck Creek Mill are approximately 102' by 44'. The plan of the building, however, contains a number of discrete spatial units (numbered I to V in Figure 1). Phase I was a two-story brick structure of about 31' by 32'; Phase II was a smaller one- or two-story timber-framed structure measuring nearly 24' by 22'; and Phase III a framed-in link between I and II, 31' deep and 13'6" wide. Phases IV and V enlarged the mill to its present size.
2. Foundations

Phase I: The first-period structure composing the Duck Creek Mill rests on an uncoursed rubble stone masonry foundation defining a full cellar. The west wall is slightly banked uphill to where the original race ran beside the south gable of the structure. Late changes in the power and drive systems of the operation required the removal of more than three-quarters of the southern foundation wall and the transfer of its load-bearing capacity to a composite girder composed of four 2 1/2" by 7 1/2" circular-sawn timbers fastened together with large wire nails. The mid-section of the girder is carried by the end of the belt drive and turbine husk framing. The southeastern corner of the building is further braced with a battered wood-form cast-concrete buttress rising from the outside edge of the tail race. The three remaining foundation walls, originally laid in lime-based sand and gravel-tempered mortar, have been repeatedly repointed and parged both inside and out. The basement floor of the first period structure and all subsequent additions appear to have been first of packed earth with later sections being finished with poured concrete. All structural posts throughout the basement area have been reinforced with concrete, stone, or masonry pads.

Phase II: The second-period foundation, located along the south bank of the race system, is a brick construction laid in five- and six-course common bond. The locally-fired brick includes some random glazing and

is laid on a lime-based sand-tempered mortar. Both the north and south gable-end foundations defining the basement have been removed to accommodate now-vanished line shafting for the belt-drive operation of the mill. The load-bearing capabilities of the north wall have been transferred to an 8 by 9 1/2" circular-sawn pine girder laid flat with a lapped-scarf joint over the eastern-most of the two timber posts supporting the span. The framed structure of the south gable-end is now carried by a four-board composite girder identical to that spanning the south gable-end of the first-period structure and borne on a single 1' by 1' 5 1/2" concrete pylon.

Phases III, IV and V: Other elements of the mill structure radiating around the first and second-period structures are carried on cast concrete or concrete block pylons or piers, except for the northern shed additions, which rest on concrete block piers set atop a continuous cast-concrete foundation rising to an uneven height of two to three feet. The cast-concrete penstock and drive system foundations and footings are described in section 6.

3. Walls

Phase I: The first-period structure was of brick construction laid in five-course common bond and sets in lime-based sand-tempered mortar rising two stories and a full attic above the basement level. While the east and north elevations have remained largely unaltered, the entire south gable end has been removed and framed in on principle posts bearing the ends of summer beams formerly set in the masonry wall. The west facade has been largely removed at the first floor level, with the second-floor masonry now carried on two iron eye beams bedded into the surviving southwest and northwest masonry corners of the mill and additionally braced with a 1' by 5" straight-sawn pine post at the approximate center of the span. Although the east wall remains as exposed brick, the west wall has been painted and, at the second floor level, covered with sawn weatherboard. The north wall remains as built, but is covered with frame additions ~~built~~ nearly to the height of the gable peak.

Phase II: The second-period structure, which at first stood independently of the brick wall, is of braced-frame construction. Although the majority of the timber has been reused or relocated within the mill, second-period fabric stands out as being composed of mechanically sash-sawn timber fastened with full mortise-and-tenon joints and pinned together. This section was of post-and-rail construction designed for vertical-board siding, but at a later date suffered the removal of all but the most essential first-floor framing and the studding of the second floor level with circular-sawn scantling and reused common rafter sections for seating the weatherboard applied throughout the entire structure. The principal framing system was reinforced with post-to-girt and post-to-plate sway bracing, most of which is vertically sawn, although at least one member, possibly a replacement, located in the original southeast gable corner, is circular sawn. Mortise patterns

indicate in the south gable end the former presence of a singleth ground-floor window opening and in the west facade a single door and sidelight arrangement. Structural changes dating to the late period of this section include the introduction of a three-board composite girder composed of 6 1/2" by 2" planks carried at either end by 4 1/2" by 6 1/2" by 2" planks carried at either end by 4 1/2" by 6 1/2" circular-sawn posts and in the center by two evenly spaced circular timber posts. All joists have been either reused or replaced. Finally, the north gable end is almost completely rebuilt of circular-sawn, braced-frame elements, with sway bracing running upwards in a manner similar to the earlier period fabric.

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Phases III, IV and V: The remaining walling, including the framing for the shed addition running around three-quarters of the building^{is} of dimension-sawn 2 by 4" wire-nailed framing clad with whitewashed, rabbet^e-edged and lapped, millsawn weatherboard and red board framed openings. A more recent 20th-century shed addition off the east wall of the second period structure is of stud-and-rail construction covered and roofed with galvanized corrugated metal sheeting.

The space between the first and second-period structures is framed in with joists running between the two buildings and at a right angle to their joist arrangements. Again, the majority of the material here is reused, except for the 2" by 4" dimension-cut and weatherboarded stud walling of the east elevation infilled between the buildings.

4. Structural System: Framing

Phase I: The first-floor structural framing within the masonry structure consists of hewn and pit-sawn joists ranging from 9" by 6" to 1' by 7-1/2" timbers bedded in the masonry walls. Spanning half the width of the mill, the ends of the joists are lapped or laid over a 9" by 10" summer beam laid flat and supported at midpoint by a 9" by 9" 'sansom' post and capped with a timber pillow or cushion. Repairs in the masonry where the joists enter the wall^{as} well as evidence of joining scars in the massive first-floor joists^{suggest} they are replacements employing recycled timbers from the earlier pre-turbine husk-and-millstone framing.

The second floor and cellar framing systems are based in the same structural periods as the first or main floor. On the second floor the joists were mechanically, vertically-sawn 9" by 3-1/2" timbers on approximate 2' centers, with one end bedded in the masonry and the other carried by the summer beam.

The basement framing consists of hewn as well as a few simply flattened unbarked logs averaging 11" by 7" and set on approximate 2' centers. These are supported in the same manner as the upper floors. Only eight of these timbers survive in the north gable end against the east wall, and only six against the west wall. All other framing has been replaced with variously sized circular-sawn timbers set on 2-1/2 to 3-foot centers.

Phase II: All original internal framing has been removed at all levels from the second-period mill. Mortise scars indicate the original joists ran on an east-west axis but have been rearranged to run north-south. All basement joists are circular sawn, 7-1/2" by 2-1/2" planks set on edge on rough 1' 9" centers. The joists are supported by previously described girders at either end, as well as two additional post-supported composite girders of three 7-1/2" by 2-1/2" planks equally situated across the mill.

The first and second floor internal framing system for the second period structure and frame skirt has been previously described in Section B-3.

5. Porches

A one-story shed roof enclosed porch runs along the full length and gable depth of the area described by the total area and infill of the first and second period structures. The dimension-sawn lumber framing is fastened together with wire nails and covered with a common rafter system lapped over a two-board composite plate. The rafter ends are boarded in with a plain cornice. The entire shed arrangement is randomly pierced by hinged or sliding vertical board-and-batten doors and six-over-six light sash framed in milled, unornamented architraves painted red. The porch or shed area is sheathed with milled weatherboard.

6. Chimneys

There is no evidence for any chimney or stove flue arrangement throughout the structure.

7. Openings: Doorways and Windows

There are no original doorways and few window openings remaining on the main floor in either the first- or second-period structures. There are, however, two original window openings and a doorway in the east wall of the second-period mill basement and a doorway in the east wall of the first-period mill basement, as well as several original window frames scattered throughout the building. All that remains of the first-period doorway is the opening itself and what appears to be a replaced timber lintel reset in the stone masonry. The first-period windows are composed of mortise-and-tenon framed architraves with flat sills and lightly beaded fascia applied around the entire frame of 4" by 4-1/2" timbers with mitred corners at the bead and fixed with cut nails. All first-period windows had six-over-six lights sash with ogee moldings enframing the individual lights. An additional window-like opening pierces the west wall of the southwest corner of the building. Framed with an undecorated mortise-and-tenon architrave of 2" by 3-1/2" members capped with a load-bearing lintel, the opening served as a service portal of unknown function.

8. Roof

The roof of the mill now presents an irregular series of connected gable elements with their ridges running along a north-south axis. The entire structure is covered with wood shingle nailed to evenly-spaced shingle laths. Where the gables rise above the adjoining unit in Phases I, II, and III, the roof line exhibit projecting eaves. Each section of the main roof is also finished with a plain unornamented boxed cornice formerly painted red. The roof framing for the Phase I structure is a common rafter arrangement braced by lapped, half-dovetail collar eaves, with the rafter feet notched over a false plate carried on the joist ends projecting beyond the vertical plane of the wall, and joined at the ridge with a lapped and pinned joint. In the later history of the mill several of the collars were removed and the rafters along the west slope of the roof lifted to a horizontal position to frame in a large two-bay gabled dormer window illuminating the attic work space. The roof framing for Phases II and III is of mill-sawn lumber with the jointure of the common rafters at the ridge and at the plate nailed in place. A later dormer window in the west slope of the Phase II structure has collapsed and fallen into the structure.

C. Description of Interior

1. Floor Plans:

a. Basement level. The basement level of the Duck Creek Mill is banked along the western elevation and straddles the head and tail races where they enter and exit the structure. The first and second phases of the building are defined by common bond brick walls and contain the remnants of the belt drive system of line shafting that conveyed power to all stages of the milling operation. The south gable end of the Phase I basement facing the turbine housing has been removed, and both the north and south gable ends of the Phase II building have been demolished. The mechanical systems surviving in the basement level are described in Section C-6.

b. First and second floors: Through the process of addition and selective demolition, the interior of the Duck Creek Mill is now a single, large open work space with a semi-enclosed area in front at the Phase I structure and a storage shed and grain bin located along the north elevation.

c. Attic level: The full attic of the Phase I structure is also an open work space which has been enlarged through the addition of a large two-bay dormer window in the west slope at the roof.

2. Stairways: The only surviving stairway in the Duck Creek Mill is an open tread and string arrangement leading from the interior northeast corner of the Phase I mill to the upper floors. At the second floor level is a chamfered newel and hand rail. Although the stair is not original to the building, it occupies the same position as the first

stair and is evidenced by joining and flooring scars. While the original stair led from the basement to the attic, the present arrangement rises only from the first floor to the attic. There are no other extant stairways in the structure.

3. Flooring: Where the floors of the Duck Creek Mill have not weathered through, their construction appears to be of two types. In the Phase I Mill the original flooring in the second and attic levels is composed of random width sash sawn lumber one inch thick. Throughout the rest of the building the flooring is of narrow width, one-half to three-quarter inch boards. In both cases the type of wood is difficult to determine due to deterioration and heavy staining from the building's industrial usage.
4. Wall and Ceiling Finish: In the first-period structure the interior walls were finished with plaster applied directly to the surface of the brick walling. The attic level was also finished with horizontal board knee walls to contain grain in the process of being milled. All other interior walls and all ceilings throughout the building are unfinished.
5. Openings: No original interior openings survive in the Duck Creek Mill. Interior window trim has been described in section B-7.
6. Mechanical Systems: Although largely gutted of its grinding machinery, the Duck Creek Mill still contains some machinery of note. In the space framed in between the first and second construction periods of the structure stands an early ^{20th} ~~twentieth~~-century form cast concrete headstock containing the submerged remains of the metal water turbine that powered the mill in its final phase of operation. A bevel-edged cast iron wood-toothed driving gear is mounted on the vertical iron shaft of the turbine approximately four feet above the plank-floored top of the turbine housing. The driving gear meshes with a second vertically-mounted ^{bevel} ~~bevel~~-edged cast iron gear translating the revolutions of the turbine to vertical revolution of several cast iron belt wheels mounted on a common shaft with the second gear. This arrangement, mounted in the basement of the Period I structure, transmitted power to a four shaft bank of plank grain elevators cycling in a continuous movement to the attic of the building. Belt drive was also supplied to a "Western Corn Sheller" on the first floor and, through the gearing upwards via a second shaft of belt wheels in the basement, to an electric generator that produced electricity for the mill. The only other milling-related item in the Duck Creek Mill is a small buhr taken from a self-contained belt-driven grist mill and placed as a footing beneath a later husk-frame post in the basement of the Period I structure. ?

All evidence of grinding, bolting, sifting and packing machinery, as well as of additional grain elevators, drive systems, and associated machinery, have been removed from the building.

D. Site

1. General Setting and Orientation: The Duck Creek Mill is situated on a rough north-south axis fronting Delaware Route 486. Duck Creek, flowing west to east, passes by the mill to the immediate north with the race coming off the creek as a spur and entering the mill through a head race located approximately at the midpoint of the west elevation. The tail race exits from the mill at a comparable point in the east elevation and feeds back into Duck Creek.
2. Historic Landscape Design: The Duck Creek Mill originally stood at the heart of a small trading center known as Duck Creek Village or Salisbury. All that remains of the community is the mill and the miller's house, known as the Lindens. Of additional note, however, is the fact that the mill and its immediate environs stood in the larger context of the 18th- and 19th-century grain trade that employed Duck Creek as a primary thoroughfare. The only other structure in the area relating to this trade is the Brick Store (N-135), an 18th-century water-oriented granary, located west of Smyrna in Blackbird Hundred, New Castle County.
3. Outbuildings: The single remaining outbuilding associated with the Duck Creek Mill is a mid-20th-century balloon-framed and metal-sided storage shed.