HFR-201

John Brown's Fort

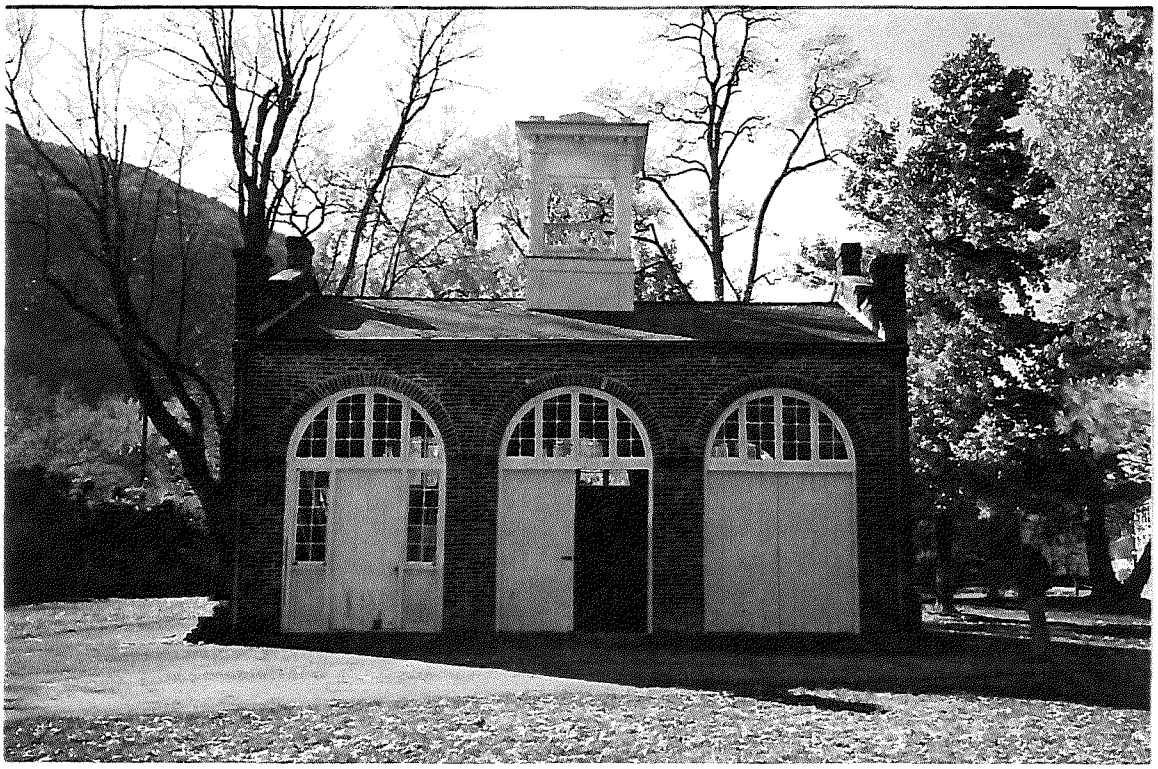
Building 63

Harpers Ferry National Historical Park

Flood / Storm Recovery Project

Condition Assessment Report and Preservation Repairs

February 1998



Prepared by:
National Park Service
Historic Preservation Training Center
4801 A Urbana Pike / Gambrill House
Frederick, Maryland 21704

TABLE OF CONTENTS

I. INTRODUCTION

D. Project Responsibilities

Donald Campbell ,Superintendent,Harpers Ferry National Historical Park
Bruce Noble, Chif of Cultural Resources, Harpers Ferry National Historical Park
Tim Fox, Chief of Maintenance, Harpers Ferry National Historical Park
Bob Wilhide, Maintenance Supervisor, Harper Ferry National Historical Park
Peter Dessauer, Park Architect, Harpers Ferry National Historical Park
Tom McGrath, Superintendent, Historic Preservation Training Center
Doug Hicks, Assistant Superintendent, Historic Preservation Traing Center
Tom Vitanza, Historical Architect/Project Supervisor, Historic Preservation Training Center
Chris McGuigan, Team Leader/Exhibit Specialist, Historic Preservation Training Center
Anthony S. Donald, Project Architect, Denver Service Center, Architecture

E. Compliance

The 106 compliance for flood/storm repairs to John Brown's Fort, Harpers Ferry National Historical Park, Historic Structure # 63, are covered in a 1997 programmatic agreement between the park and the State Historic Preservation Officer in West Virginia.

II. EXECUTIVE SUMMARY

II. EXECUTIVE SUMMARY

The John Brown Fort has a number of problems which fall primarily into the categories of masonry, carpentry and millwork, all of which all can be addressed and corrected through the use of in-house preservation and maintenance staff. While there are no critical fabric or structural issues that fall into a life safety concern, the current conditions will accelerate if left untreated, and may become a hazard if not corrected.

The major areas of masonry deterioration fall into two zones. The first zone is at the base of the structure. The stone water table and the fifteen courses (plus or minus) of brick above the water table have been subject to numerous submersions by the rising rivers of the Shenadoah and the Potomac. The mortar joints in the stone water table are for the most part non existant and need replacement, while the mortar joints for the brick are extremely soft and can be raked out without much effort. The mortar joints for the entire lower portion of the building should be raked out and repointed. It is recommended that a more moisture resistant mortar be used at the lower courses to help prevent deterioration when future flooding does occur. The other masonry repair zone is at the top of the end walls of the structure. The two gable end walls form a parapet wall, above the roof line, that is exposed to the elements on both sides . The soft brick combined with freeze/ thaw cycles has caused these areas to deteriorate at a faster rate. It is recommended that these gable end parapet walls be raked out and repointed on both sides, and the cap stone be reset and repointed. The outer side of the walls should be repointed down to the brick band course. As with the lower portion of the structure it recommended that a denser, more moisture resistant mortar be developed for use at these locations that will be less susceptible to future deterioration.

The carpentry and millwork items that require attention are defined as doors, windows, and the cupola. While the structure of the cupola appears to be sound the trim work needs attention. The current millwork for the cupola dates to the 1970's preservation effort and has no historic integrity; this, combined with numerous trim being rotted, open joints at trim where water can penetrate, and the somewhat difficult access for maintenance, leads to the recommendation that the majority of the millwork be removed and replaced, and the entire structure be painted. As for the doors and windows the majority of damage is at the lower levels which have been subject to flooding, moisture, and insect infestation. The main areas of concern being the door frame at the east end of the north elevation, the sash adjacent to this door , and the window sill at the north end of the east elevation. These areas will require the removal and replacement of various millwork components.

It is also recommended that the cut firewood that is stored against the east elevation be moved away from the building, as this provides a good breeding point for wood boring insects. While certain areas may require temporarily removing the item from the building for shop based repairs, some of the repairs may be more readily accomplished in place.

The sheet metal gutters and downspouts have been damaged over the years by severe snow and ice storms. The gutters and down spouts were both constructed of very short sections of lead coated copper which provides the potential for leaks at each joint. While it is assumed that the short sections were used to simulate that which may have been historically correct it does create a maintenance problem. It is recommended that the gutters and downspouts be replaced, and that additional gutter and downspout brackets be fabricated and installed to provide additional support in the event of future heavy snows and ice.

The slate roof appears to be in very good condition. Several slates will need to be replaced and the flashing at the cupola will need to be investigated and corrected when the trim at the base is replaced. When viewing the underneath side of the roof from the interior , the framing and sheathing also appears to be in very good condition; it does not appear that the roof is leaking.

The drawings which are provided as a basis for the recommended repairs are those which were developed for the ca. 1976 repair effort. While the doors and windows are relatively straight forward in their design, the cupola framing may or may not have been constructed as noted on the drawings. Extra care should be taken with this feature when the work is accomplished.

III. BRIEF CHRONOLOGY

III. BRIEF CHRONOLOGY

1848	The engine/guard house of the armory was designed and constructed under the supervision of Major Symington.
1859	John Brown storms the Armory and siezes the Engine House.
1891	Building sold to the John Brown Fort Company, the structure was dismantled and shipped to the Columbian Exposition in Chicago.
1893	Building open to the public at the Columian Exposition in Chicago.
1895	The building was moved to the Murphy farm which overlooked the Shenandoah River near Harpers Ferry. (dimensions of the structure , along with several smaller details were modified during its rebuilding, and the current structure in lower town reflects the changes made at this time)
1910	Trustees of Storer College bought the building from Mr. Murphy for $900 and had it moved to the college campus.
1958	While at Storer College, the building was recorded by the Historic American Buildings Survey (HABS)
1968	The National Park Service acquires the college campus and the building was moved to its current site in the lower town of Harpers Ferry National Historical Park. It is felt that the block foundation was installed at this time.

1976	Construction documents prepared for repairs to the structure which were to be accomplished by day labor crews under the direction of the National Park Service, Denver Service Center.

IV. EXISTING CONDITIONS

IV. EXISTING CONDITIONS

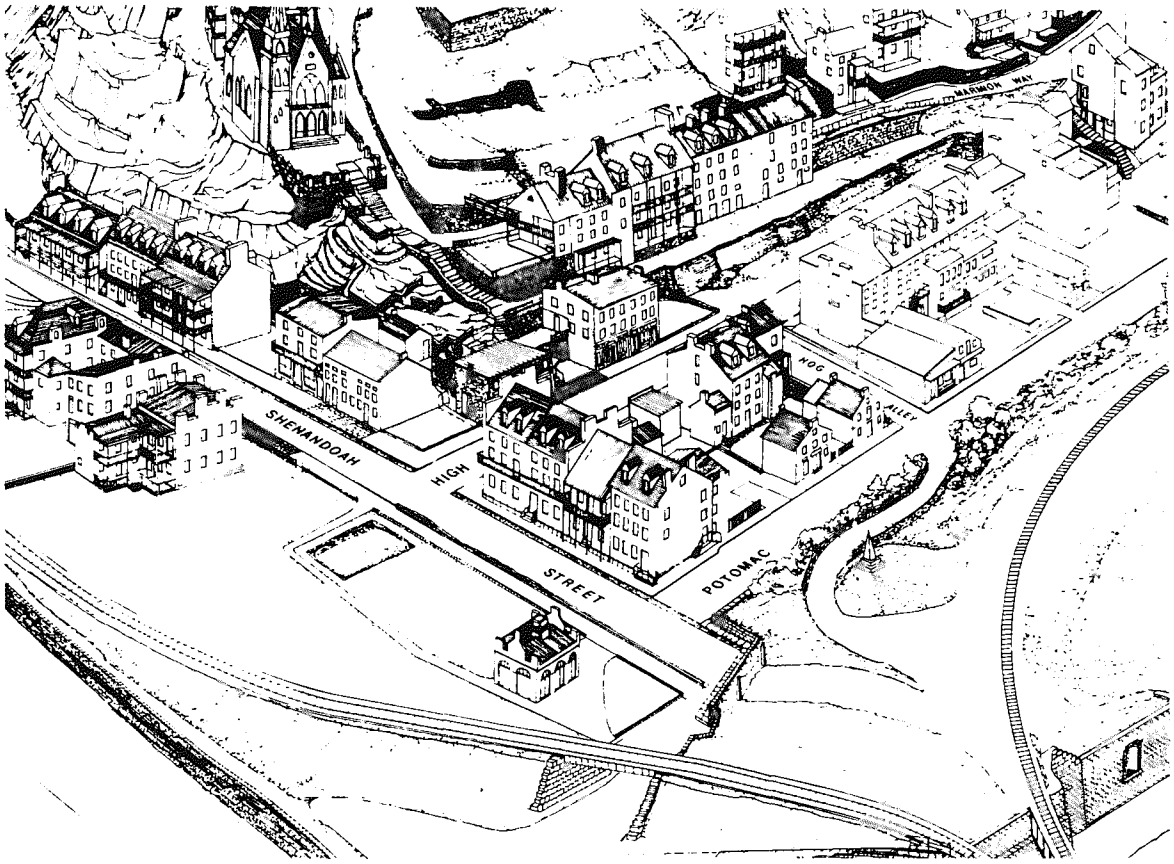
General

The current site location of John Brown's Fort is the fourth in its history. The original site is located within several hundred feet, to the north-west, of the current structure and is marked with a small obolisk shaped monument.

The structure itself is brick masonry that is laid in a common bond pattern. Over the various reconstructions, the pattern has been broken and is somewhat inconsistent. The brick work sits on a dressed stone water table. The building falls into the category of Federal style architecture.

Site

While true north would orient the fort towards the short dimensions of the end wall which parallels Shenandoah Street, the last two sets of drawings produced of the



John Brown Fort / Flood- Storm Recovery Project / Condition Assessment Report and Preservation repairs / February 1998

building orients the structures north to the long dimensions such that the main elevation, with all the entrance doors, is now designated as the north elevation of the fort. In order to provide continuity of previous work at this site, this report will keep the buildings north elevation as the long elevation which will also be considered the primary elevation.

The site can be accessed from all compass points with the main route being from Shenandoah Street. The grade from the roadway leading to the point where the Potomac and Shenandoah Rivers meet , on the north side of the structure, is the most accessible for handicapped individuals from a grading standpoint. The interior floor elevation of the building is approximately five to ten inches above the exterior grading and does not provide access under the Uniform Federal Accessibility Stanadards (UFAS) or the Americans with Disabilities Act (ADA). For the most part the grade does slope away from the building on all elevations except on the south. On the south elevation a small depression, directly adjacent to the water table of the building, creates a small swale that allows water from the downspouts to be trapped against the masonry rather than being directed to the lawn area adjacent to this elevation.

North Elevation

The top of the dressed stone water table, at grade level, varies from five to ten inches above the surrounding grade. The mortar joints for the stone have deteriorated over time and for the most part the mortar is non existent. The brick masonry above the water table was laid in a common bond pattern, but the header courses vary from every seventh to eighth course, and in some areas there are no header courses but just running bond. The damage to the lower fifteen courses of brick focuses around the deteriorated mortar and can be attributed to the severe flooding that has inundated the building over the last several years, and to a possible rising damp situation.

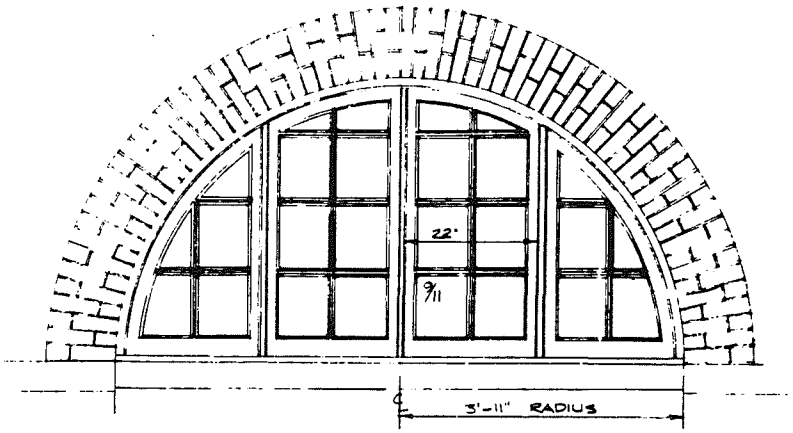
This elevation proper can be broken into three bays, each designated by a brick arch outlined by a soldier course of brick. The upper portion of each bay is infilled with a semi-circular window sash from the spring line of the arch, and a door from the spring line to the ground. The elevation measures approximately 34'-3" in length with each masonry opening measuring approximately 8'-0" wide; this leaves the brick piers at the corners and between bays at 2'-6". The pair of double-sheave doors in the center (D102) and western (D103) bays are similar in design and construction; they are 1" thick (actual) vertical tongue and groove board on the exterior and 1' thick (actual) diagonal tongue and groove on the interior. The door on the eastern end of this elevation (D101) is also constructed of tongue and groove boards but it is a single double-sheave door that

measures 3'-10" by 8'-3" and it is centered between two glass side lights which are approximately 1'-10" by 5'- 0"; the bottom portions of the side lights being a flush wood panel. While the large pair of double doors have minimal damage at the bottom portions of each leaf, the single door and frame with its associated side lights has seen more drastic decay from both moisture and insect infestation. It should be noted that the interface between all of the door and window frames and the masonry openings are/were filled in with mortar which has failed and allowed moisture to get behind the frames and rot the wood out from behind. Another issue that was noted is the glazing at the window sash; over the years the glazing compound between the glass and the wood has become brittle and cracked; this creates another place for water intrusion and eventual decay of the window components. It appeared that approximately 50% of the glazing compound is in this condition.

South Elevation

The south elevation is a mirror image of the north except that the lower portions of each bay do not have doors but are filled with recessed brick masonry. The same issues exist relative to the masonry. The mortar at the joints in the stone water table is missing and the fifteen courses of brick masonry above the water table have extremely soft mortar joints that can be attributed to high water levels during flooding events and possibly rising damp. In addition to the soft mortar the lower five courses of brick have moss and lichen growth which is contributing to the deterioration of both brick and mortar.

The semi-circular window sash at each bay are divided into four sections (see diagram), and as on the north elevation approximately 50% of the glazing compound has become brittle and cracked which will lead to future deterioration of the window components if not corrected. The only rot noticed on these windows was at the western



SEMI-CIRCULAR WINDOW

end of the eastern window (W108), the bottom rail at this end needs to be replaced. It was also interesting to note that the wood sills for these windows (WT106,WT107,WT108), which appear to be replacements (ca. 1976), do not have a drip edge cut into the underneath side which would help to keep water from running back under the sill and to the building.

East Elevation

The east elevation measures 22'-3" in length, and is divided into two bays. An in-swinging casement window is located in the center of each recessed bay. The windows are divided into two sash with each sash having twelve lights which are 9/11. The window sill on the north end (W110) has a combination of rot and insect damage at the right end. The end returns of both window sills have separated from the brick and have left gaps for water to penetrate into the end grain and accelerate deterioration and rotting. The window on the south end (W109) has rotted at the bottom rail and it is suspected that the rot has also effected the bottom of the side rails and the pins holding the sash together. The pins holding the bottom and side rails together on the north window are also loose ; a closer look at this sash may also reveal deterioration that will require additional replacement. As was also noted on the window sills of the south elevation, the sills do not have a drip edge cut into the underneath side which would help prevent water from rolling under the sills and to the wall.

This elevation had a stack of cut wood piled 1-1/2'-2' high adjacent to the masonry. This does not allow for the masonry to dry out properly and is a breeding ground for wood boring insects.

The mortar joints of the stone water table have deteriorated as have the fifteen course of brick masonry above the water table. Here again water from past flooding has taken its toll. The end walls of this elevation extend up above the roof line and form a crenelated gable wall that is capped by stone. The corbeled brick at the eave line of the north and south elevation carry around this elevation in a brick band which falls about four courses above the brick arches. The area above the band to the stone cap acts , for the most part, as a parapet wall and the mortar is in very poor condition. The joints for the stone cap are also in poor condition, and the cap stone itself may need to be removed and reset.

West Elevation

The west elevation mirrors the east except for the window configuration. The windows in the two bays on this elevation are the semi-circular ones that are typical of those found on the north and south elevations with a blank recessed brick panel below.

The deteriorated joints in the stone water table, and the ten-fifteen courses of brick masonry above the water table are similar to those found at all the other elevations. The lower two to three courses of brick have moss and lichen growth that allows for excessive moisture to be trapped within the soft brick. A marble marker located in the pilaster to the north side of this elevation shows signs of minor vandalisim with a mark of "H" . The four iron pins holding the slab in place have started to rust and are just beginning to stain the stone. The crenelated gable wall shows the same signs of deterioration as the east elevation, and is in poor condition. The cap stone joints are also in poor condition, and here again, the stone may need to be removed and reset.

The wood sash in both bays appears to be in good condition except for one piece of glass that is broken on the north window (WT104). The glazing compound around the glass is cracked and brittle on approximately 50% of both windows (WT104 /WT105).

Roof and Cupola

The roof is covered with slate and is a uniform 9" width with an exposure of 6" - 6-1/2" to the weather. Due to the uniform gray coloration it is possible that the source of the slate may be from the Buckingham-Virginia Slate Corporation in Arvonia, Virginia. The schedule of their standard roofing sizes indicates that with a 6 1/2" exposure and a 9" width, the length of the slate would be 16". The standard thickness of 3/16" also conforms to that which is on the building. The ridge is overlapped to the north approximately 2". There are several broken or split slate but the overall condition of this roof is very good.

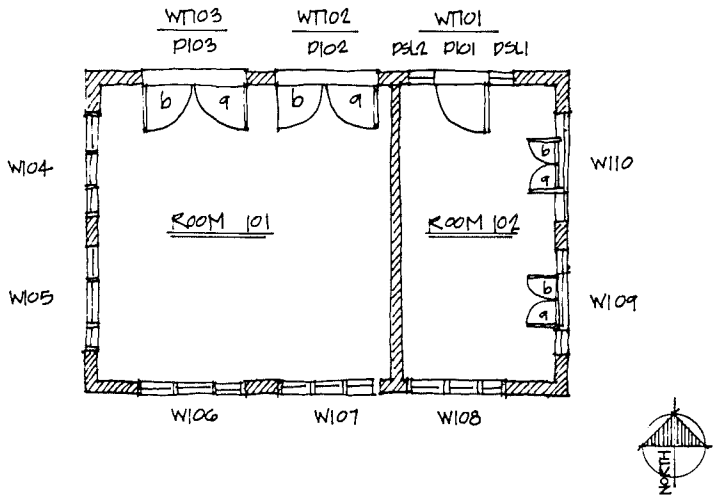
The gutters and downspouts are located on the eave lines of the north and south elevations. The lead coated copper gutter is a half round that is 6" wide that was fabricated in short sections of 1'-8" and soldered together. The high point of the gutter is at the center of the building and slopes down to both east and west ends to a 3" diameter lead coated copper downspout. The gutter is supported by nine mild steel gutter pins that are driven into the brick joints at the corbeled eave line. The gutter itself is quite wavy but it appears that it is sloped properly. It was not water tested so it is unclear as to the water tightness of the joints. The downspout is also constructed in short sections of 2'-4"

and is also quite wavy; three straps hold the gutter tight against the structure with a wood block at the base to hold it out from the water table.

The woodwork on the cupola shows the most signs of distress. The most noticable locations for rot are highlighted with a black fungal mold ; this includes the crenelated trim at the upper roof and the railings at the lower portion of the cupola. At some point in the last twenty years it appears that the 1" x trim boards which cover the corner posts were cut approximately 2' above the metal deck and replaced on all four columns. The joints have opened up and it now presents a place for water to be caught. The trim at the top of the column on the south east corner was either built with a slight slope or it has settled. The joints on the majority of trim have opened and allow for moisture penetration and eventual rot. The flat seam roof at the lower deck appears to be in good condition except for a small separation at one seam towards the center. The upper roof could not be accessed with the lift and was not investigated at this time. The tongue and groove siding that forms the base of the cupola is rotting through at the bottom boards that are adjacent to the roof surface; it appears that there may not be enough space between the roof slate and the bottom boards and when snow and ice builds up at this point it gets trapped and wicks into the wood. It will also be necessary to look at the flashing details at this area to ensure that it is properly flashed.

Interior

The structure is divided into two rooms on the interior, with the dividing wall between the spaces being constructed of brick. The two bays containing the pairs of doors open into the larger space while the smaller space , on the east end, is accessed through the single door with the sidelights.



The floor in both areas is brick, laid in a basket weave pattern, in what appears to be a sand setting bed.

The wood members of the roof structure are exposed to the space below and appear to be in very good condition. The slight green tint to the members implies that the wood maybe pressure treated. There was no obvious signs of any roof leaks.

The two pairs of doors into the large space are missing small diagonal pieces at the base of the doors. The wood nailing block on the west end of the brick pier to the center bay has pulled away from the masonry. The single door and sidelights have not withstood the flooding and insect infestation as well, and the lower portion of the door and frames are in poor condtion, as are portions of the frame and stops for the sidelights.

V. PRESERVATION TREATMENT RECOMMENDATIONS

V. PRESERVATION TREATMENT RECOMMENDATIONS

Site

Provide universal access at the north elevation entry. Minor regrading and the addition of five to ten inches of additional fill can be installed to provide an earthen "ramp" to entry level by raising the ground level. This will also provide additional positive drainage at the north elevation of the building. A slope of between 1:10 and 1:12 is recommended by CABO/ANSI A117.1-1992; accessible and usable buildings and facilities; (a slope of 1:6 is permissable for a run up to 2 feet). Regrade to acheive the lowest possible slope, a 1:12 to 1:20 is the preferable range for exterior grading. see preservation brief # 36.

Site drainage will be improved with minor regrading at all elevations to create positive drainage. Other options for improving site drainage include extending the downspout ground leaders so the discharge is more than 18" from the base of the building.

Masonry

The dressed stone water table, at grade level, should be excavated to the bottom of the stone and the joints raked out and repointed. The 1976 construction drawings indicate that the water table was built on top of a concrete block foundation wall that should be just below the existing grade level. The stone itself appears to be approximately one foot in depth and the existing grade should be approximately 6" to 1'-0" above the bottom of the stone.

The first fifteen courses of brick should have the mortar joints raked out and repointed around the entire perimeter of all the walls both on the interior and the exterior. The soft mortar can be easily removed by hand tools. It is recommended that the replacement mortar be a mix that is more water resistent than the existing material.

The brick joints on the east and west end walls should be raked out and repointed from the brick band to the stone cap on the exterior and from the roof line to the stone cap on the interior. Here again it is recommended, that since this area is more susceptable to freeze thaw cycles, that a more durable mortar mix be utilized than what is currently in place.

The stone forming the cap of the walls on the east and west elevations should be removed and reset. It is also recommended that the center chimney feature on these elevations be provided with a mortar wash that is slightly sloped , as not to be seen from the ground, to help facilitate water run off at these areas. Another approach would be to cap the chimneys with a sheet metal hood.

The marble inset on the north end of the west elevation should be cleaned of the rust stains that are forming due to the erosion of the steel pins that help to keep it in place. A poltice may need to be used to lift the graffitti stain. The steel pins should be removed and replaced with a non staining material such as stainless steel.

Windows

The semi-circular windows on the north, south, and west elevations are for the most part in good condition. While only two broken panes of glass need to be replaced, one the west elevation (WT104) and one on the north (WT102), the glazing compound for a large percentage of the windows is beginning to crack and peel. While this may not present an immediate problem, it is recommended that while the other work on the structure is being accomplished the deteriorated compound be removed and replaced to ensure long term durability of the window components.

It is estimated that this repair work is needed over 30% - 40% of the existing window area. The western most half of the bottom rail at the east window on the south elevation (WT108) is rotted and needs repair. If this cannot be removed easily, it is recommended that epoxy repairs be done in place. A similar condition exists on the two end bottom rails of the center window on the north elevation (WT102); this may also be a window to repair in place. It is also recommended that the wood sills of all semi-circular windows on the south and west elevations have a drip edge cut into the underneath side of the sill (kerf cut).

The casement windows on the east elevation (W109/W110) should both be removed and repaired . The most serious work is the replacement of the wood sill on the north end of this elevation. The sash itself , on both windows, needs repair to the bottom rails, and all pin joints should be verified and reglued or replaced as necessary. As with the semi-circular windows , the casement window sills need to have a drip edge cut on the underneath side. It is also recommended that approximately 30% of the window panes be reset with new glazing compound.

The interface between the wood frames and trim on the windows and the brick masonry were filled with mortar. While some of the mortar has withstood the test of time, a number of areas have failed allowing water to penetrate behind the trim to the frame. A decision needs to be made as to the benefit of replacing these intersecting planes with a sealant rather than mortar.

Doors

The two pairs of double sheave doors at the center (D102) and west (D103) bays are in relatively good condition. The center doors are missing two small diagonal boards at the lower corners where the doors intersect when in a closed position. It is recommended that these boards be replaced. While not noted on the field notes it would be wise to run some additional material for similar replacement on the other door. A nailing block , which is located the left hand side of the interior, for this center door, has pulled loose from the brick and needs to be reset. The left hand leaf of the door will need to be removed to relieve the pressure on the frame while this work is accomplished.

The single door (D101) and sidelights (DSL1/DSL2) are in poor condition. It is recommended that the entire unit be removed for repairs. This recommendation is based on the fact that the
frame on the east end of this opening is rotted up to a height of 8'-2" and repairs need to be made to the door frame, door, flat panels below the lights, the bottom rails of the sidelights, and the window stops.

Roof

The slate roof is in very good condition. It appears that there are less than a dozen broken slate that will need to be replaced. It is recommended that the broken slate be removed and replaced. Further investigation is necessary to determine the flashing details at the intersection of the slate roof and the base of the cupola. The flat metal seam roof that covers the cupola could not be accessed but if the floor deck of the cupola is an indicator of condition, it is probably in good condition. The flat metal seam roof that covers the floor deck may have one small seam in the center that needs to be cleaned and resoldered.

It is recommended that the 6" half round gutters on both the north and south elevations be replaced with lead coated copper that is fabricated in longer sections. It is also recommended that additional gutter brackets be placed on both elevations to provide additional support to the gutter. The 3" diameter downspouts should also be replaced with lead coated copper in longer lengths.

Cupola

The appearance of the cupola , from ground level, would lead one to beleive that this feature is in relatively good condition, but a closer inspection indicates that 75%-80% of the millwork needs to be replaced. The railings on all the elevations need to removed and replaced. The trim boards facing the columns have been repaired and all the joints have opened at the repairs; it is recommended that all of the 1" x trim boards on all four columns be removed and replaced for the full length of the columns. The horizontal siding boards , between the floor and roof, have started to rot at the bottom; it is recommended that all of these boards as well as the corner boards at this area be removed and replaced. The crenelated wood trim at the roof level could not be accessed , but signs of mold on the surface indicates that these features need attention; it is recommended that the crenelated trim boards be removed and replaced.

The only areas of the cupola that do not appear to need attention are the decorative brackets, the cornice they are attached to, and the underneath side of the roof. It is assumed that the structure of the cupola will be in good condition when the trim is removed but this will need to be verified when the work is being accomplished. The other area of concern that needs to be investigated , when the trim boards on the columns are being removed, is the top of the south-west column , which appears to be tilting inward. A decision on what is causing the problem and a recommendation will need to be determined in the field.

VI. PRIORITIZED TREATMENT RECOMMENDATIONS

VI. PRIORITIZED TREATMENT RECOMMENDATIONS / WORK TASK LIST

1. Doors and Windows (including painting)

A.) D101 , DSL1, and DSL2 : remove door, sidelight and frame; replace all deteriorated wood and replace.

B.) Windows at east elevation, W109 and W110, remove sash and repair, remove and replace sill on W110.

C.) Windows at north elevation, WT101, WT102 and WT103.

D.) Windows at south and west elevations.

E.) Doors D102 and D103.

2. Masonry

A.) Rake and repoint stone water table.

B.) Rake and repoint brick.

1.) Base repairs.

2.) Gable end parapet repairs (includes stone coping).

3.) All other repairs (chimney,marble inset).

3. Site Work

A.) Regrade at north elevation to provide accessibility.

B.) Regrade at south elevation to create positive drainage.

C.) Regrade at east and west elevations to create positive drainage.

4. Millwork at Cupola

A.) Remove and replace all deteriorated millwork (includes painting).

5. Roof Repairs

A.) Remove and repair broken slate.

B.) Flashing (cupola).

C.) Remove and replace gutters and downspouts.

D.) Joint Sealers

E.) Gutter Hangers

VII. BUDGET ESTIMATE

SUMMARY OF COSTS

	ITEM	TOTAL COST
Div. 1:	General Requirements	$12, 525.00
Div. 2:	Site Work	$1,700.00
Div. 3:	Concrete	not used
Div. 4:	Masonry	$8,070.00
Div . 5:	Metals	$2,300.00
Div. 6:	Wood and Plastic	$5,300.00
Div. 7:	Thermal and Moisture Protection	$3,700.00
Div. 8:	Doors and Windows	$11,700.00
Div. 9:	Finishes	$1,900.00
Div. 10:	Specialties	not used
Div. 11:	Equipment	not used
Div. 12:	Furnishings	not used
Div. 13:	Special Construction	not used
Div. 14:	Conveying	not used
Div. 15:	Mechanical	not used
Div. 16:	Electrical	not used
Grand Total Div. 1 - 16		$47,195.00

CLASSS "B" COST ESTIMATE

item	qty.	mat.	labor	total
Div. 1/General Provisions				
Supervision	L.S.		6,000.	6,000.
Supplies	L.S.	1,500.		1,500.
Equipment	L.S.	1,500.		1,500.
Transportation	L.S.	1,725.		1,725.
Project Record of Treatment	L.S.		1,800.	1,800.
total				**$12,525.**
Div. 2/Site Work				
Trench at water table	3 C.Y.		800.	800.
Regrade	6 C.Y.	50/C.Y.	1,200.	1,500.
Sod	100 S.F	2/S.F.	200.	400.
total				**$1,700.**
Div.4/Masonry				
Rake and repoint brick	1,200 S.F.	250.	5,800.	6,050.
Rake and repoint stone	200 S.F.	10.	400.	410.
Remove and reset capstones	40 L.F.	10.	1,600.	1,610.
total				**$8,070.**
Div. 5/Metals				
Gutter pins	18EA.	1,800.	500.	2,300.
total				**$2,300.**
Div. 6/Wood and Plastic				
Millwork at cupola	L.S.	2,500.	2,800.	5,300.
total				**$5,300.**

item	qty.	mat.	labor	total
Div. 7/Thermal moisture protection				
Repair slate roof	12 EA.	200.	400.	600.
Flashing	L.S.	250.	800.	1,050.
Joint sealers	100 L.F.	.50	200.	250.
Gutters and downspouts	128 L.F.	1,200.	600.	1,800.
total				**$3,700.**
Div. 8/Doors and windows				
Repair doors	L.S.	500.	3,200.	3,700.
Repair windows	L.S.	500.	3,000.	3,500.
Glazing	L.S.	500.	4,000.	4,500.
total				**$11,700.**
Div. 9/Finishes				
Painting	L.S.	400.	1,500.	1,900.
total				**$1,900.**
GRAND TOTAL				**$47,195.**

VIII. PHOTOGRAPHS (NOV. 1997)

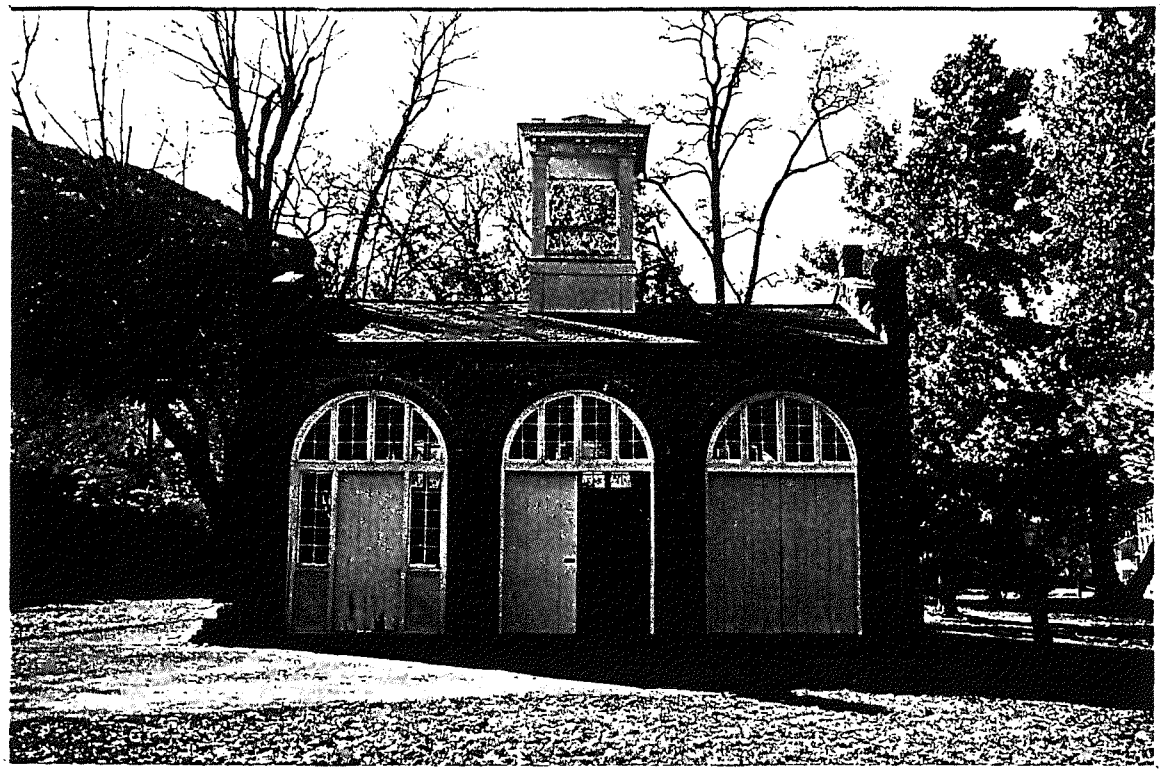


Figure 1 - John Brown's Fort, north elevation.

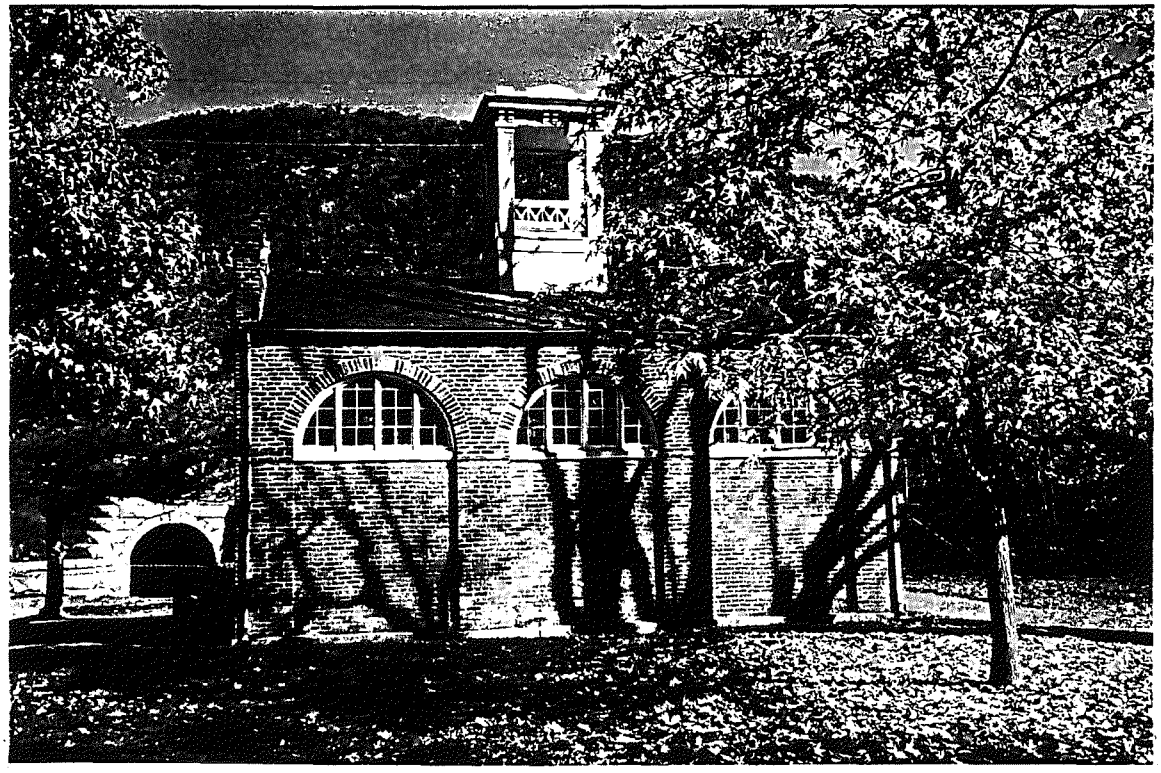


Figure 2 - John Brown's Fort, south elevation.

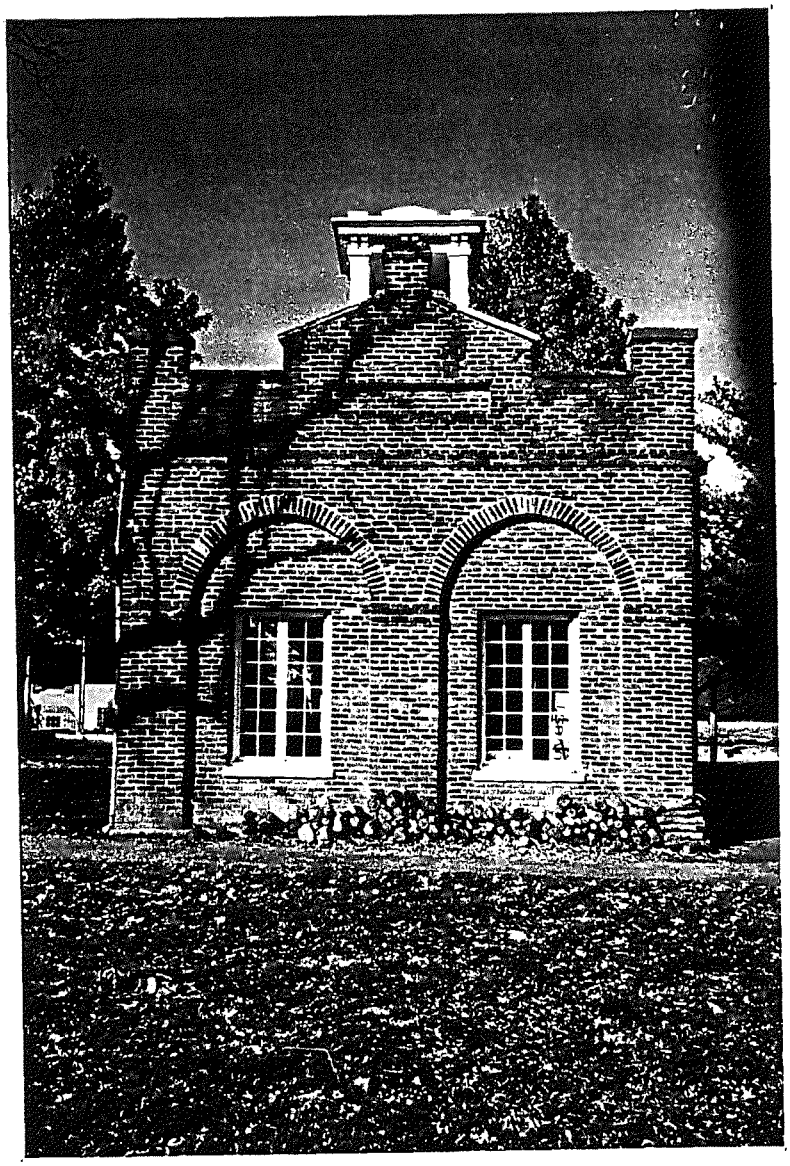


Figure 3 - John Brown's Fort, east elevation.

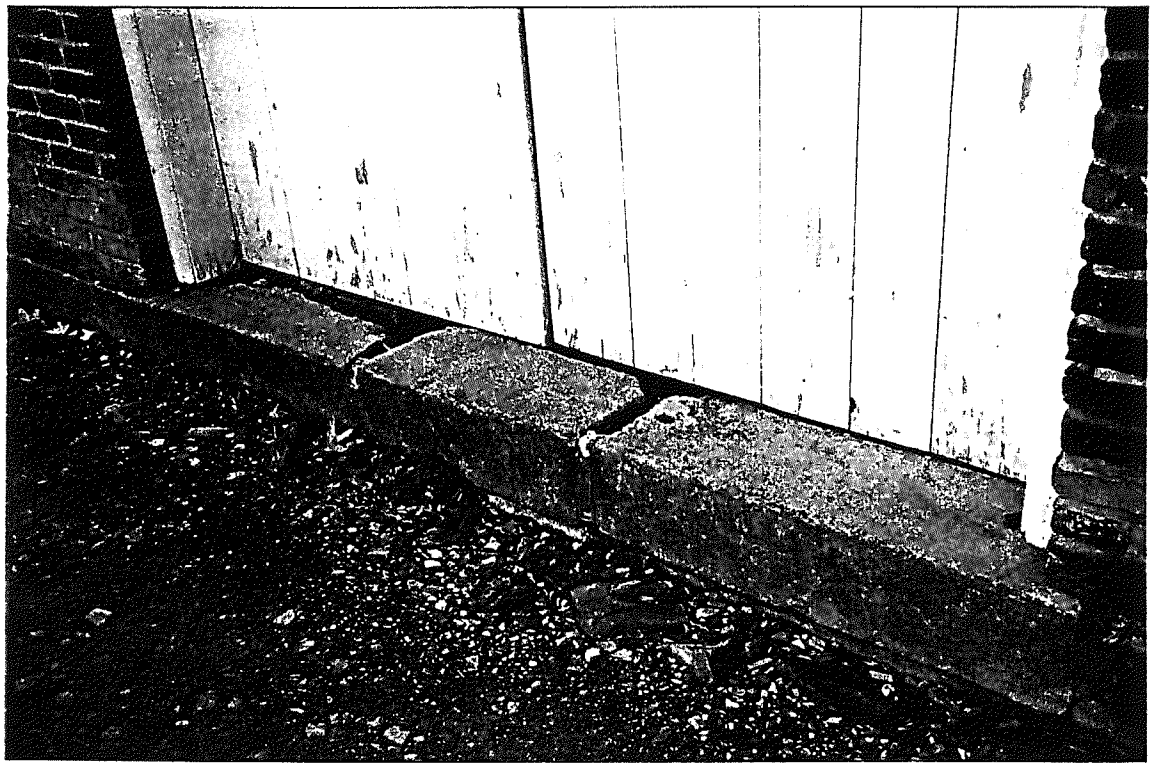


Figure 5 - John Brown's Fort , dressed stone water table at north elevation. Note deteriorated mortar joints.

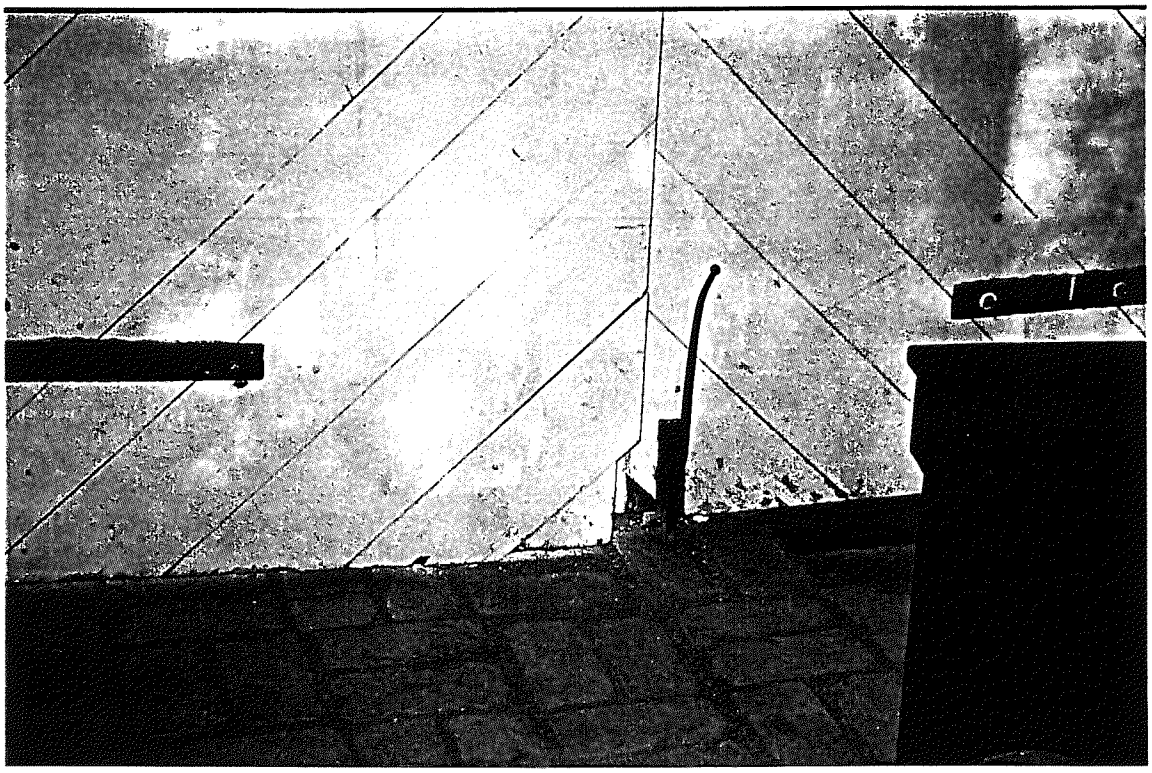


Figure 6 - John Brown's Fort , double sheave doors at center bay of north elevation.

Figure 7 - John Brown's Fort , typical detail of bottom rail at semi-circular window

Figure 8 - John Brown's Fort , rot at window sill of northern most window at east elevation.

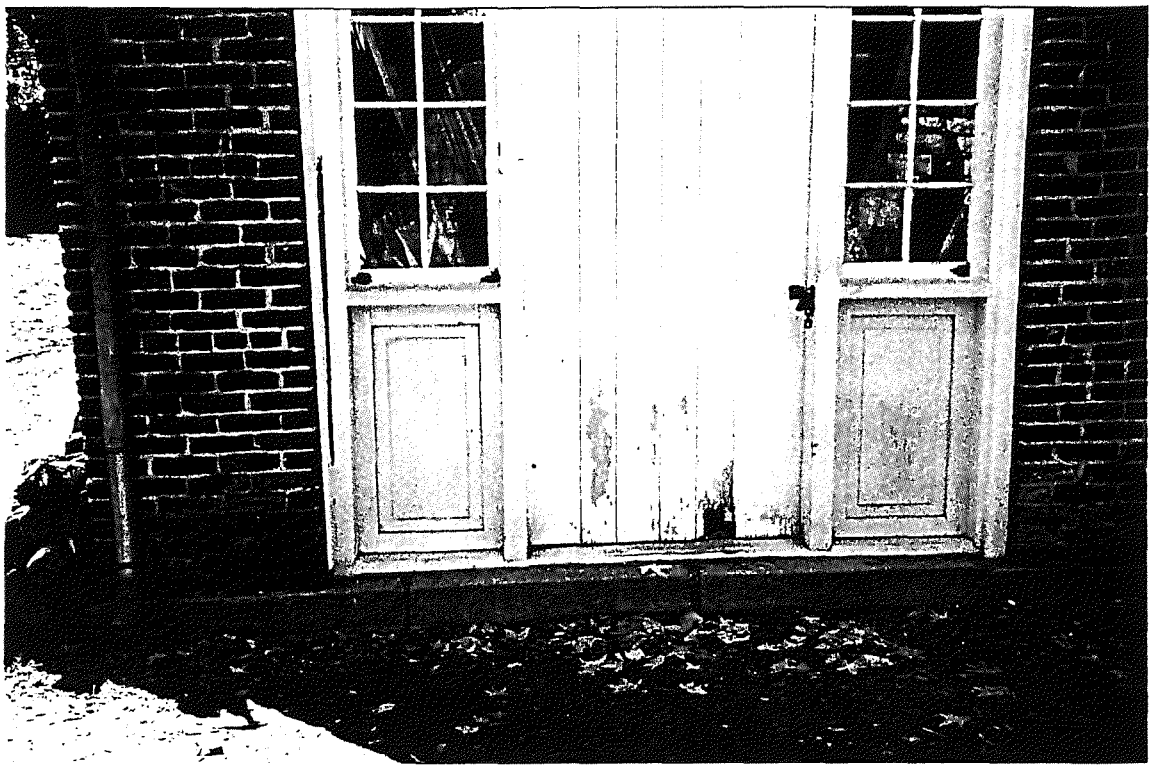


Figure 9 - John Brown's Fort , door and sidelights at eastern bay of north elevation. Note gutter discharges at base of building.

Figure 10 - John Brown's Fort , detail at bottom of door and sidelight showing rot.

Figure 11 - John Brown's Fort , wood jamb of double doors at center bay. Note gap between wood and masonry.

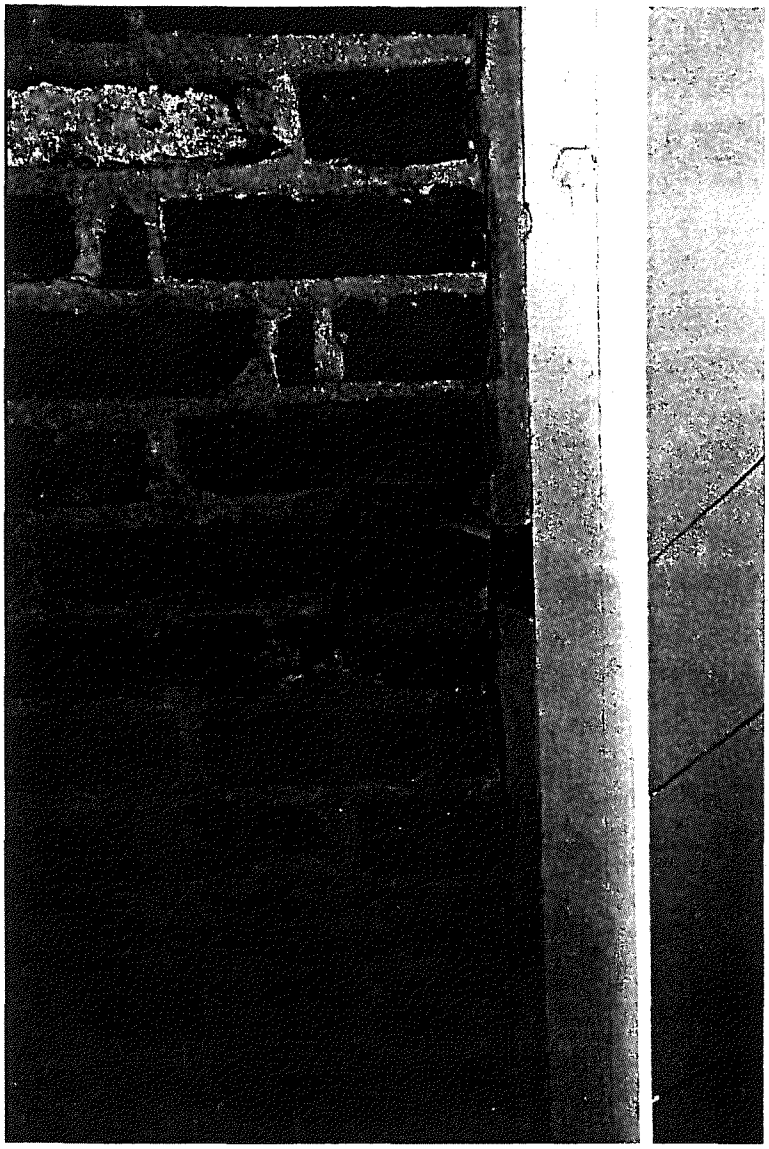


Figure 12 - John Brown's Fort , interior elevation of jamb at center bay doors. Note wood nailing block pulling away from masonry.

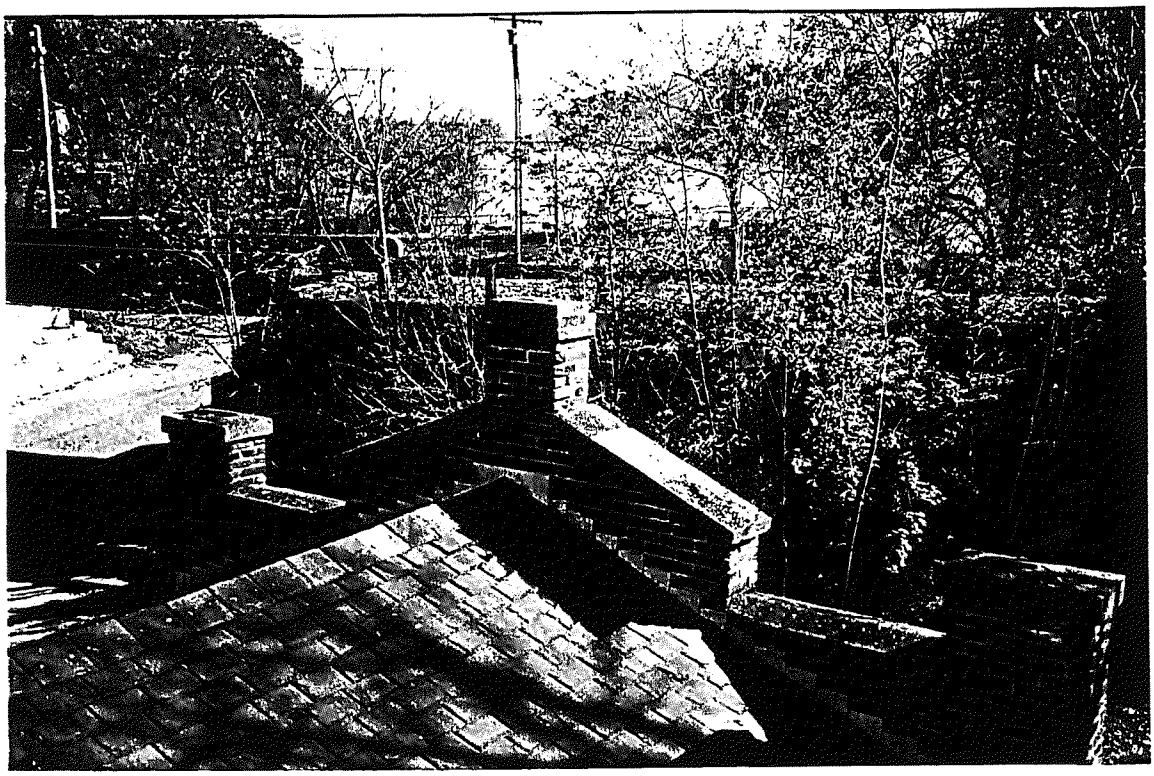


Figure 13 - John Brown's Fort , interior of east end wall above roof.
Note stone caps and lack of mortar wash on chimney features.

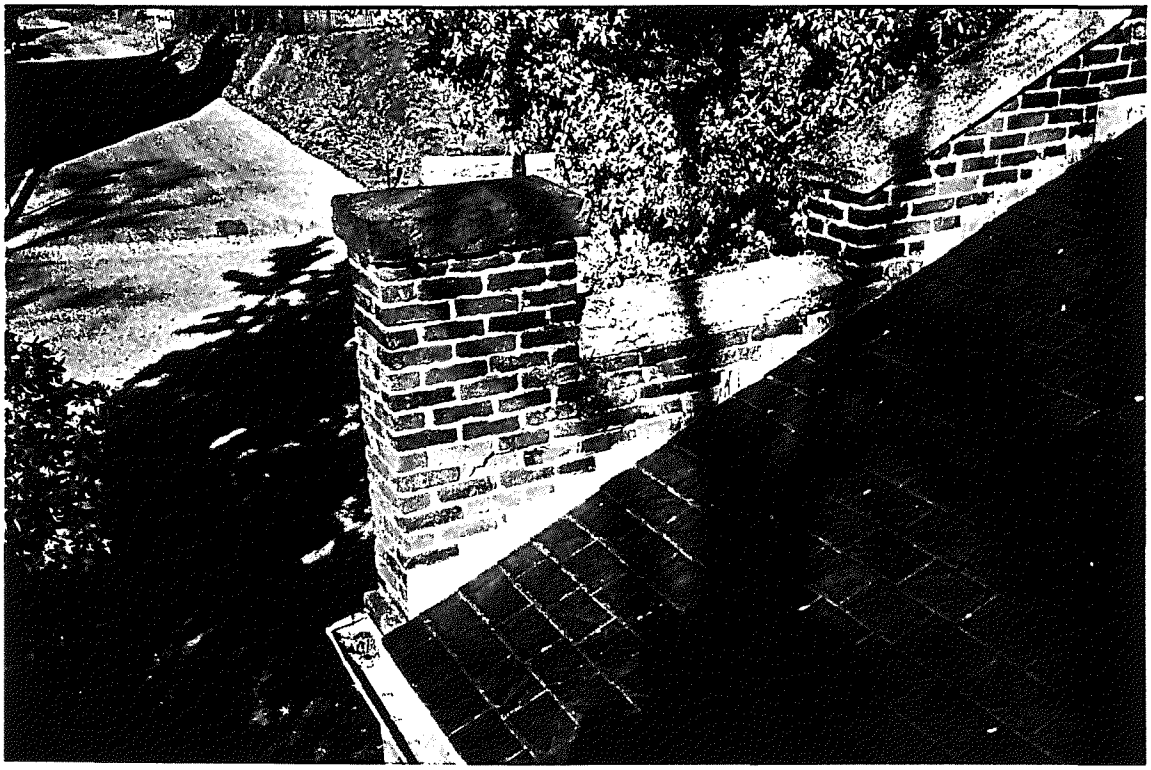


Figure 14 - John Brown's Fort , interior view of south-west corner of end wall.
Note deteriorated mortar joints.

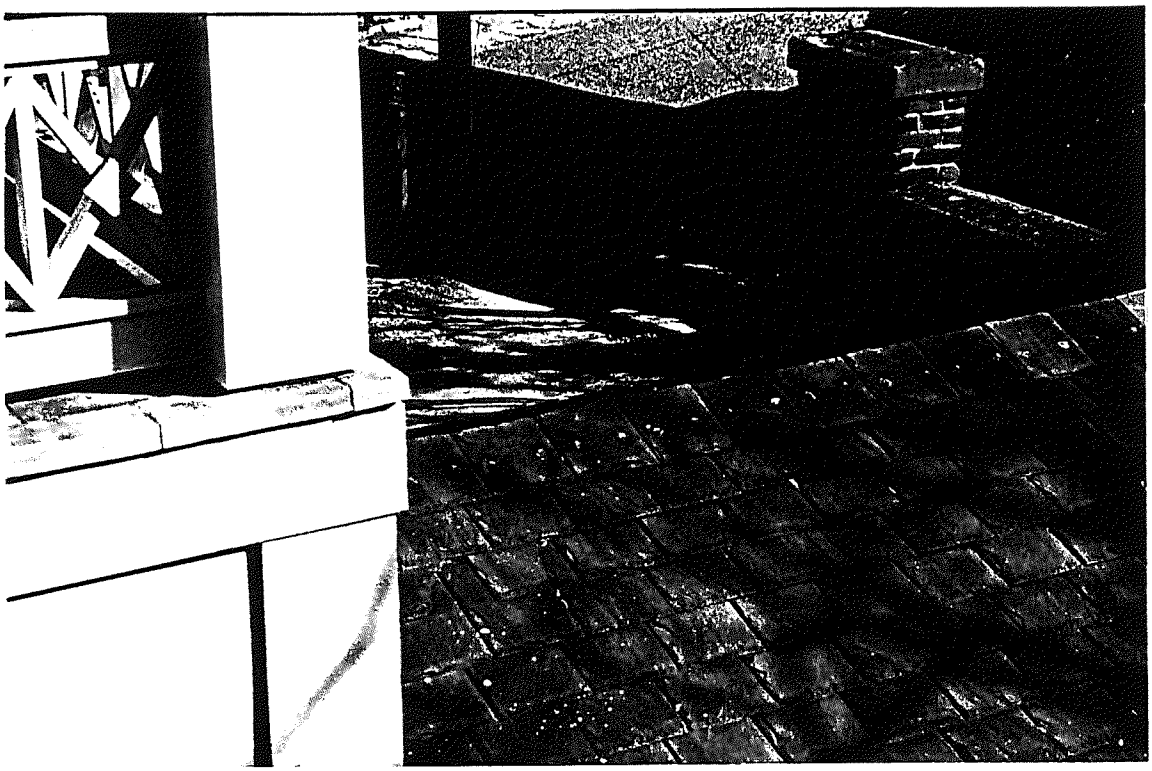


Figure 15 - John Brown's Fort , roof as viewed from south looking northeast. Note cap slate overhangs to the north.

Figure 16 - John Brown's Fort , plan view of slate roof with one broken slate shown in center. Note trim at base of cupola is tight to slate.

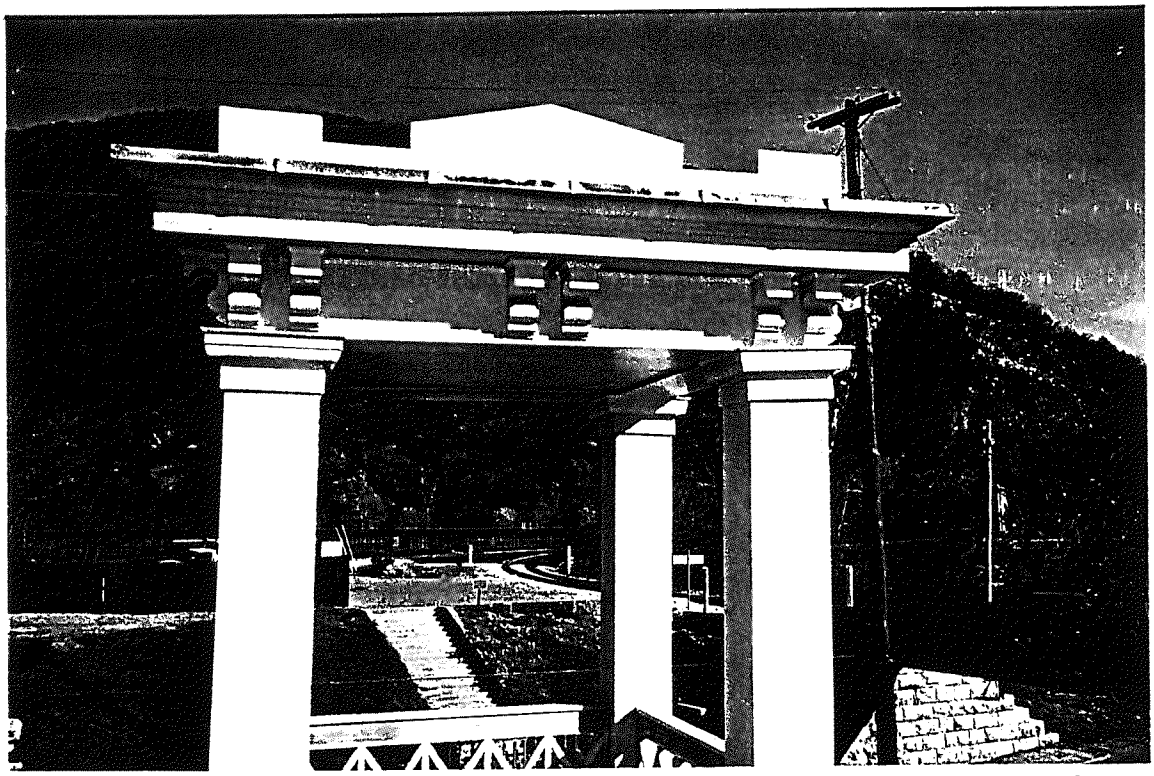


Figure 17 - John Brown's Fort , south elevation of cupola. Note top of column capital at front right slopes inward.

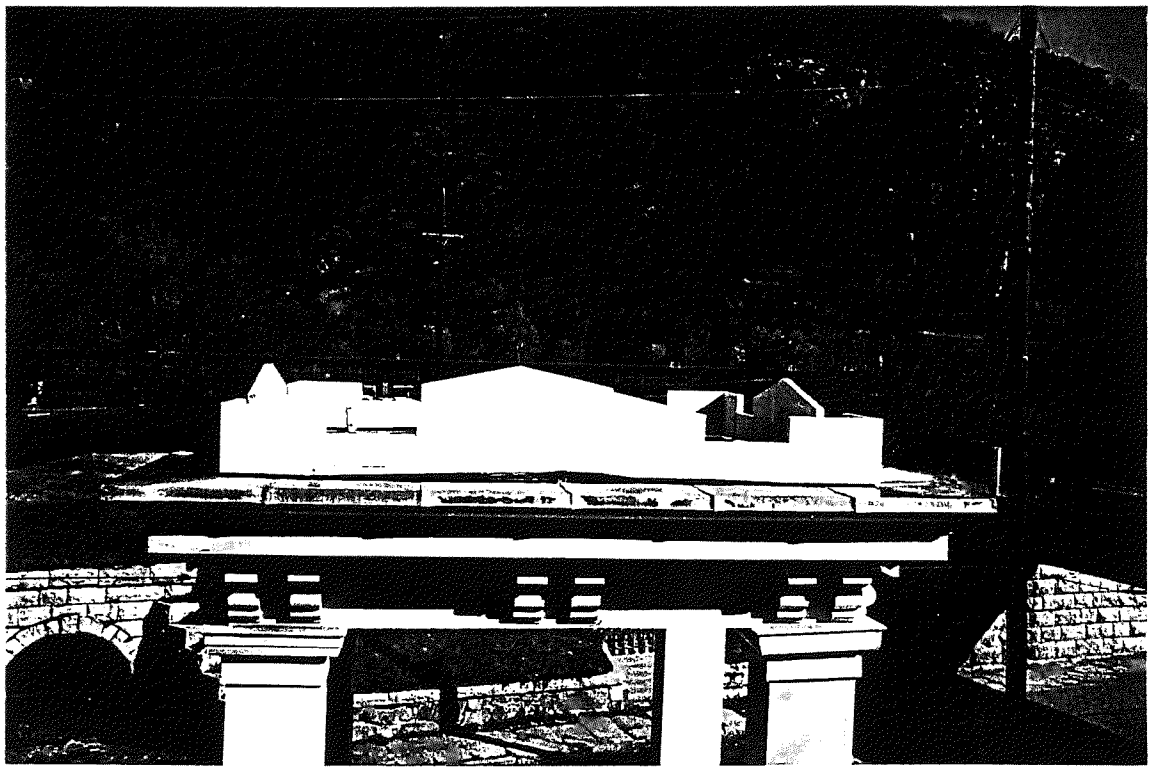


Figure 18 - John Brown's Fort , south elevation of cupola showing crenelated trim boards attached to roof by metal "L" brackets.

Figure 19 - John Brown's Fort , half round gutter on south elevation. Note how shape has flattened out and is wavy.

Figure 20 - John Brown's Fort , detail of gutter hanger and strap.

IX. APPENDIX A / FIELD NOTES

FORM D S C - 44

Park HAFE	NATIONAL PARK SERVICE WILLIAMSPORT PRESERVATION TRAINING CENTER		Sheet 1
Area JB BRT			of 7
Project	By VITANZA	Checked	Pkg.
Feature	Date 01.25.97	Date	Account

FIND NOTES FROM MTG. W/RLS.

. DESIGN PACKAGE
FRAMING DWGS? FR LAST REHAB
- CHECK PARK FILES.

1. CARPENTRY REPAIRS (INCL PAINTING)
2. MASONRY REPAIRS
3. ROOF REPAIRS
4. CUPOLA (CHANGES TO CUPOLA)

1. CARPENTRY REPAIRS
A. REPAIR TWO LARGE DOORS (MINOR)
B. REPAIR REPLACE ONE SMALLER DOOR (MAJOR)
C. REPAIRS TO WINDOWS @ GROUND LEVEL (MINOR)
D INSPECT ARCHED HEADERS - LOOK OK
E REPAINT EXT WOOD TO MATCH?
- HSR? - WHAT IS COLOR BASED ON?

2 PR CASEMENT WDWS @ S. W/ MINOR REPAIRS.
1 SILL REPLACEMENT + another SILL MAYBE SHOULD BE REPLACED - NO DRIP @ UNDERSIDE

W 1 PR CASEMENT. SASH NEEDS NEW BOTTOM RAILS
maybe dutchman to stiles? center Mullion

45

MARTIN DOOR WITH

FORM D S C - 44

Park HAFE	NATIONAL PARK SERVICE WILLIAMSPORT PRESERVATION TRAINING CENTER		Sheet 2
Area JBSITE			of 7
Project	By TAR	Checked	Pkg.
Feature	Date 01.21.97	Date	Account

2 MASONRY REPAIRS

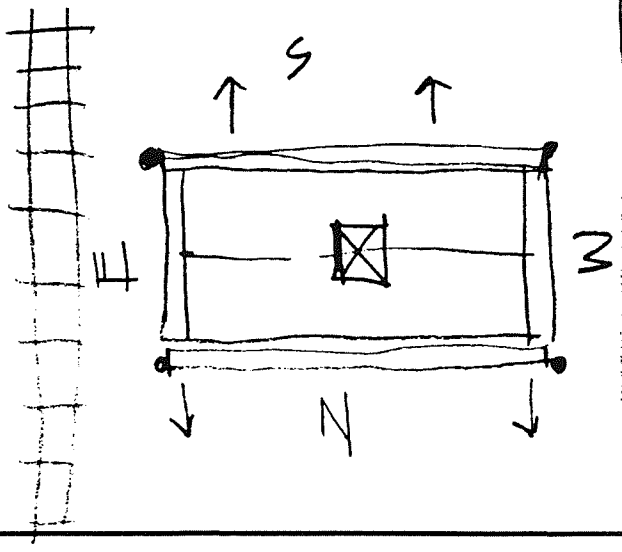
A. INSPECT EXTR/INTR WALLS DOCUMENT WALL AREAS NEEDING RAKE OUT/REPOINT MINOR BRICK REPAIRS (SPALLED BRICK)

B. GABLE ENDWALL "PARAPETS" - REPOINT COPING STONES, POSSIBLY REMOVE and RELAY BEDDING MORTAR (IF LOOSE). SAVE HIST. CONC. PATCHES - REPOINT HEAD JOINTS in CORES

C. FOUNDATIONS - EXCAVATE BASE of WALLS and REPOINT BLUESTONE SILLS.

2A. SITE DRAINAGE -

INSTALL SITE DRAINAGE (U.G.) and TIE INTO EXIST SYSTEM. MINOR REGRADING of IMMEDIATE SITE on SOUTH SIDE MAY BE NEEDED



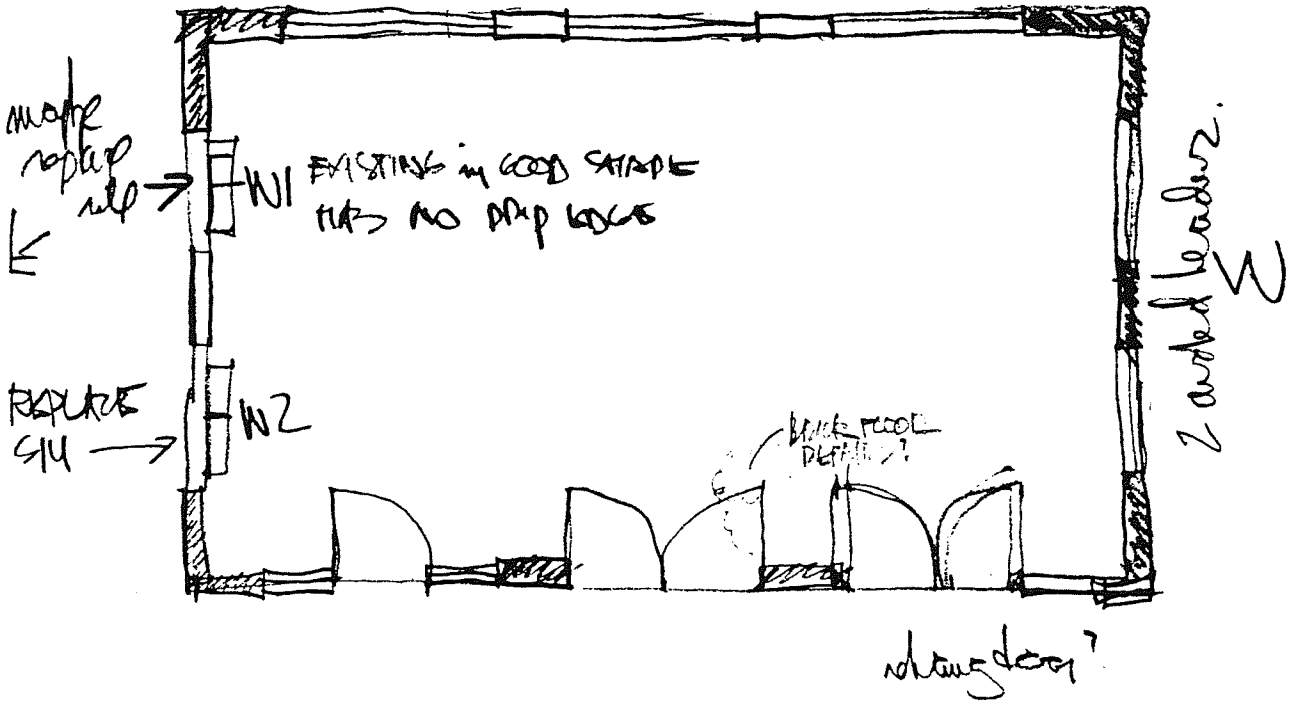
☆ U.S. GPO:1996 – 776-865

FORM D S C - 44

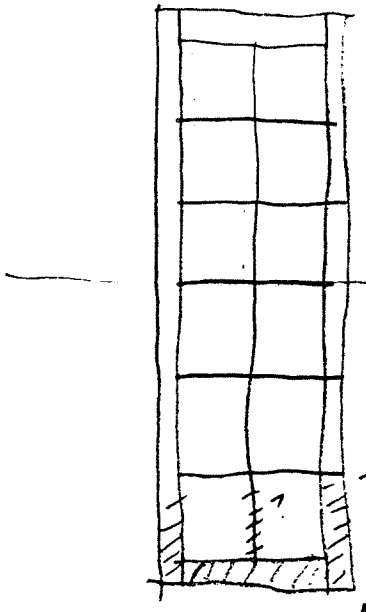
Park	HAFE	NATIONAL PARK SERVICE WILLIAMSPORT PRESERVATION TRAINING CENTER		Sheet 4
Area	BFORT			of 7
Project		By JAR	Checked	Pkg.
Feature		Date 01.21.97	Date	Account

S

3 arched heady wdws



N



LINTS & FLOOR?

WDWS (2PR) painted dark.

rotted bottom rail,

☆ U.S. GPO:1996–776-865

FORM D S C - 44

Park HAFE	NATIONAL PARK SERVICE		Sheet 4
Area BERY	WILLIAMSPORT PRESERVATION TRAINING CENTER		of 7
Project	By tar	Checked	Pkg.
Feature	Date 01.21.97	Date	Account

2E. INTR BRICK FLOOR—
REMAT SOME AREAS SO DOORS
OPEN PROPERLY (MINOR.

check & dwgs/spec.

DOUBLE DOORS—may add 1 hinge/leaf for added strength?

1B. SINGLE DOOR—STRUCT. DMG to frame and WDW & DR elements—possibly repair existing (remove and dismantle) or replace
—should have termite damage

2F. PAINT BLUESTONE SILLS ALL AROUND.

☆ U.S. GPO:1996—776-865

FORM D S C - 44

Park HAFE	NATIONAL PARK SERVICE		Sheet 5
Area BTRT	WILLIAMSPORT PRESERVATION TRAINING CENTER		of 7
Project	By TAR	Checked	Pkg.
Feature	Date 01.21.97	Date	Account

CARGRAVE: carpentry work -

3. ROOF REPAIRS

a. REPLACE BROKEN SLATES (30 MAX!)
INSPECT for BETTER LOOK

b. RIDGE SLATES - WHAT IS PROPER DETAIL?
NAILS ARE COVERED W/ ROOFING TAR/SEALANT.

c. REPAIR/REPLACE EXTL GUTTERS - POSSIBLY ADD A FEW MORE HANGERS (PD?)
EXTEND DOWNSPOUTS @ BASE - REGRADE SO THERE ARE NO PUDDLES @ BLDG.

☆ U.S. GPO:1996-776-865

FORM D S C - 44

Park	HAFB	NATIONAL PARK SERVICE WILLIAMSPORT PRESERVATION TRAINING CENTER		Sheet 4
Area	BFORT			of 7
Project		By TAR	Checked	Pkg.
Feature		Date 01.21.97	Date	Account

4. CUPOLA

a. CONDUCT INSPECTION

b. REPAIR/REPLACE DETERIORATED WOOD (RAILINGS ARE ROTTED)

c. REDESIGN TO ADD VENTILATION - CURRENTLY NOT VENTED.

NOTE - SPECIFY PT & ROT RESISTANT SPECIES)

MILDEWED/MOLDED PAINTED - LOTS of MILDEW on NORTH SIDE - ALSO BLDG IS MOSTLY SHADED in SUMMER

VENTILATE BASE and ROOF STRUCTURE of CUPOLA

~~=PROVIDE ACCESS from INTERIOR?~~

UNDERSIDE IS VENTILATED.

COLUMNS LOOK OK on 1/4 BASE PLATES

ROOF STRUCTURE (HIPPED) may need to be tested.

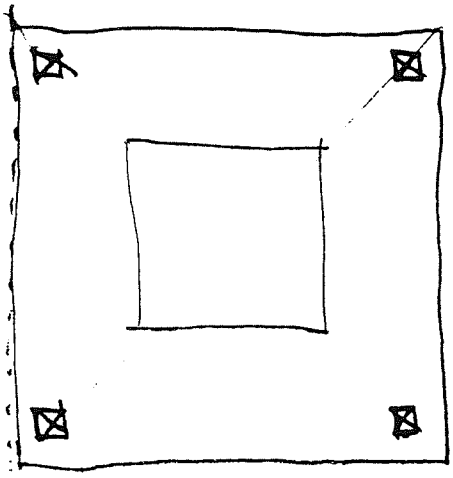
* placement of rails retrain (4) and repaint/re; inspect roof floor and roof - handle/lock flat seams needs to condition but they look OK

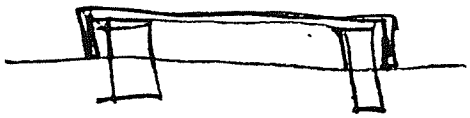
pump & plant.

☆ U.S. GPO. 1996 – 776-865

FORM D S C - 44

Park HAFE	NATIONAL PARK SERVICE WILLIAMSPORT PRESERVATION TRAINING CENTER		Sheet 1
Area BOAT			of 1
Project	By TM	Checked	Pkg.
Feature	Date 01.24.97	Date	Account





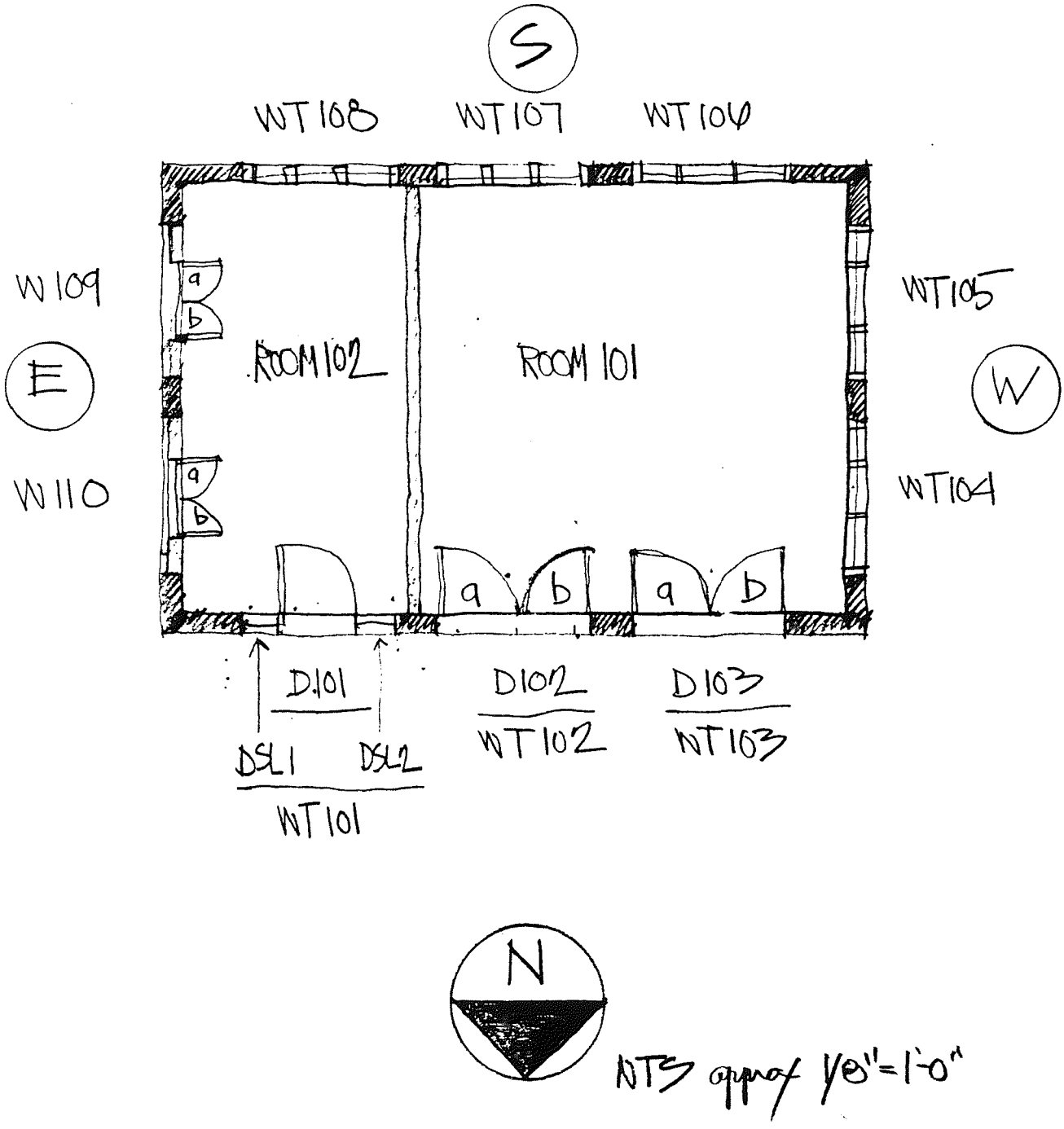
POSSIBLE ROOF MATCH?

NEED TO INSPECT ROOF SYSTEM on CUPOLA.

☆U.S. GPO:1996 – 776-865

FORM D S C - 44

Park	HAFE	NATIONAL PARK SERVICE WILLIAMSPORT PRESERVATION TRAINING CENTER		Sheet	1
Area	JOHN BROWN FORT			of	2
Project	FLOOD REPAIRS	By	Checked		Pkg.
Feature	OPENING NOMENCLATURE	Date 01/29/98	Date		Account



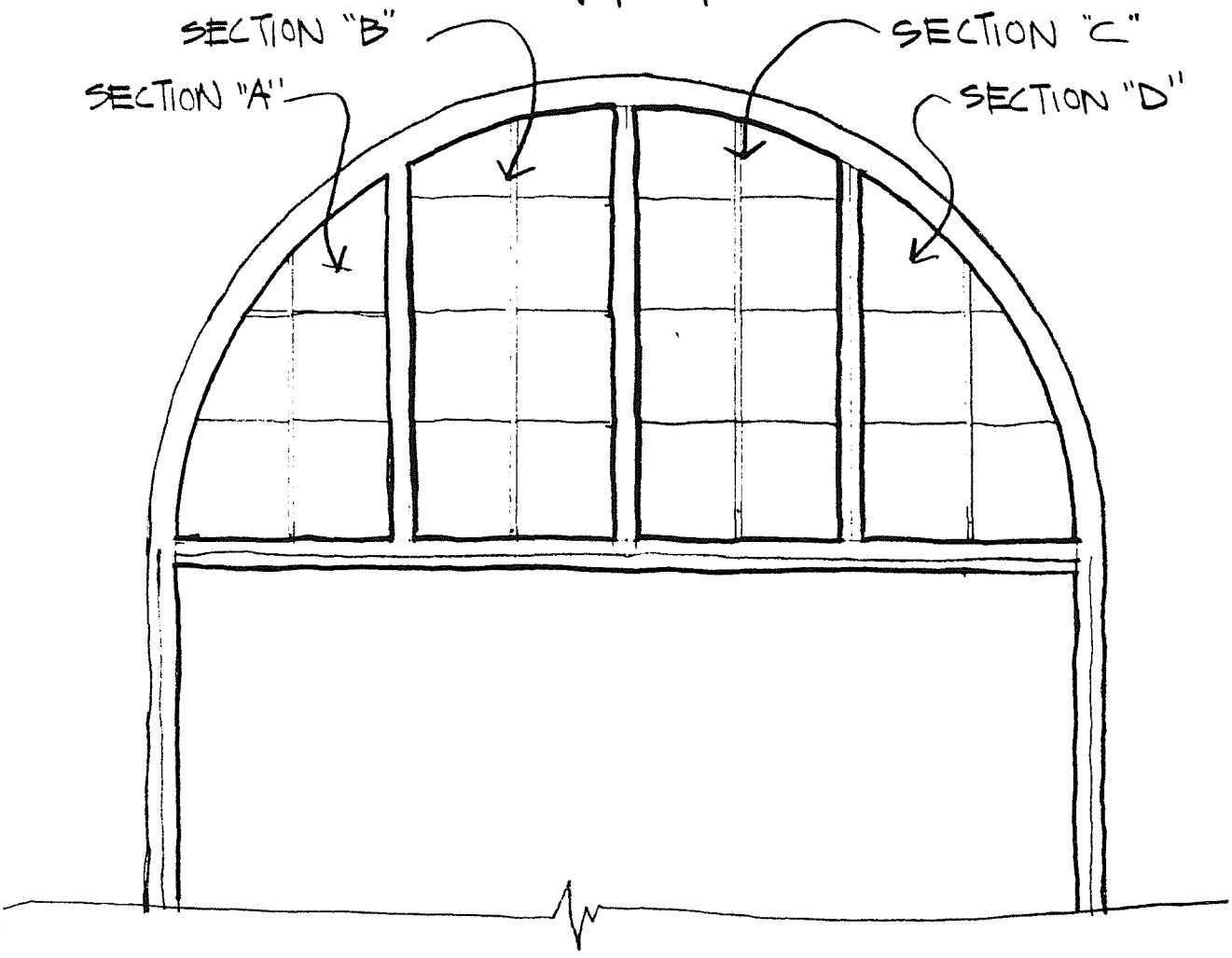
☆ U.S. GPO:1996—776-865

FORM D S C - 44

Park HAFE	NATIONAL PARK SERVICE WILLIAMSPORT PRESERVATION TRAINING CENTER			Sheet 1
Area JOHN BROWN TOUR				of 2
Project FLOOD REPAIRS	By [illegible]		Checked	Pkg.
Feature OPENING NOMENCLATURE	Date 01/27/98		Date	Account

TRANSOM WINDOW NOMENCLATURE NTS

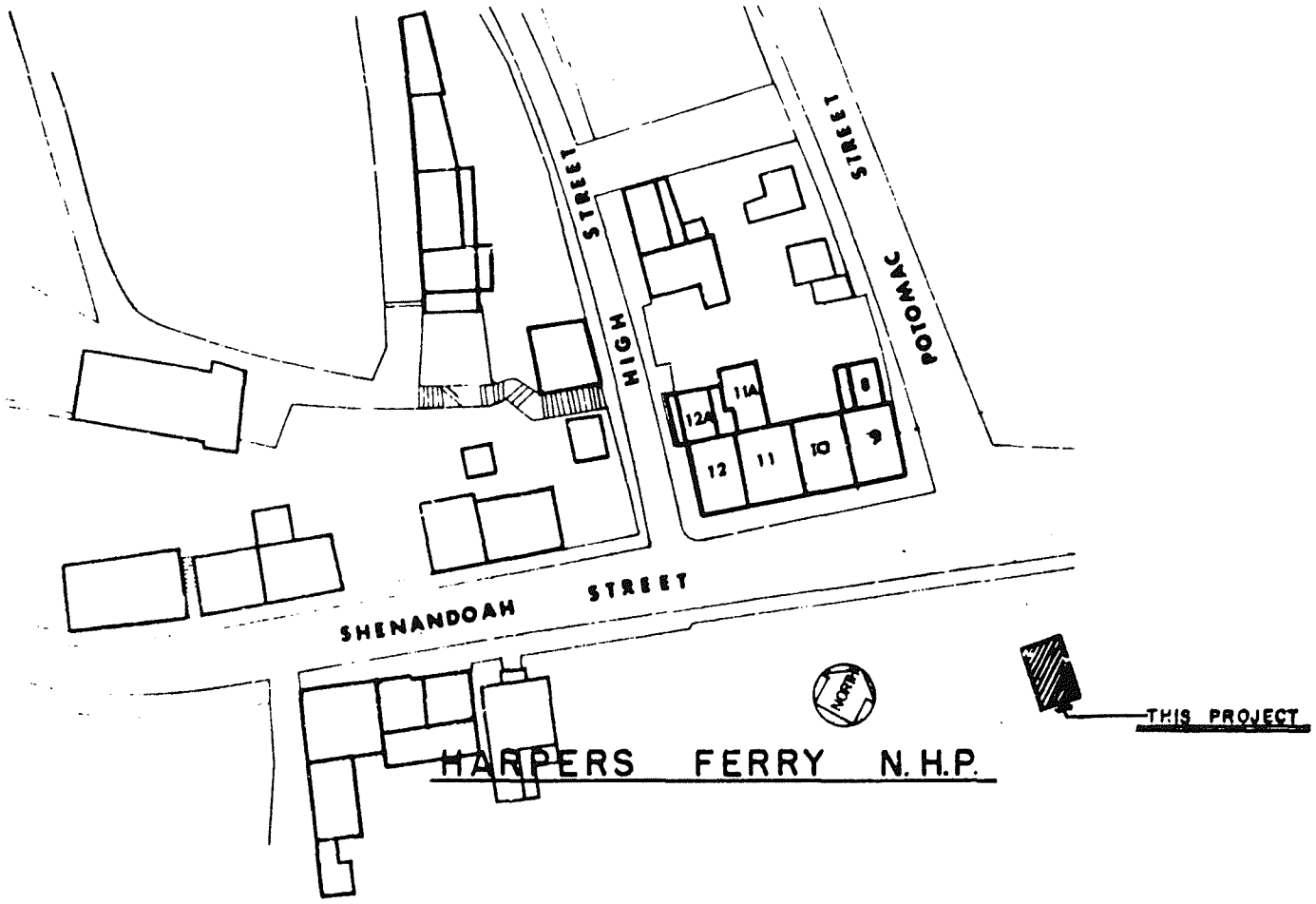
"WT101"



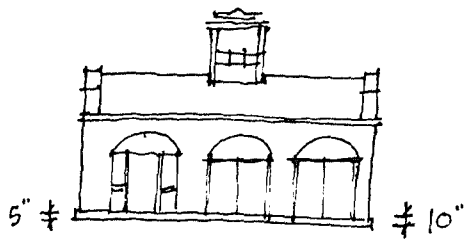
EXAMPLE for CALLING OUT PIECES of WINDOW TRANSOM for REPAIRS and RELOCATION

☆ U.S. GPO:1996—776-865

HARPERS FERRY NATIONAL HISTORICAL PARK
JOHN BROWN FORT
FIELD NOTES



FIELD NOTES
HARPERS FERRY NATIONAL HISTORICAL PARK
JOHN BROWN FORT
Date: Nov. 18, '97
Inspector: A.S. DONALD/DSC-AR



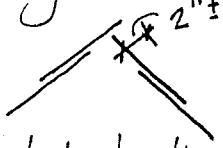
NORTH ELEVATION

- dressed stone water table @ base is 5" to 10" above grade
  utas/ada access would need to come from the north - area adjacent to bldg. entrances would need to be adjusted to eliminate step up to finish floor level on interior
- mortar joints @ water table need to be raked out and repointed (3 joints @ east end could be saved)
- brick masonry is running bond with headers that vary from every 7th course to every 8th course (in some cases just running bond/suspect that lack of consistency is due to numerous dismantlings and reconstructions.
- 3" dia. downspouts @ each end with 3 straps holding downspout to wall (downspout appears to be lead coated copper built in 2'-4" sections sections are loose and cracked.
- park maintenance showed up a little after 9:00 a.m. and provided instruction in use of small bucket lift which was set up on the north elevation.
- went up to cupola on center of roof
  - the 1x10 (7/8" x 9 1/4") trim boards surrounding the four columns have been cut 25" above the flat seam roof and the joint has pulled away allowing water to get into joint
  - railing has black mold spores on surface/probe with knife blade indicates 90% ± needs replacement.
  - the flat seam (lead coated copper roof/13 1/2" wide panels/ looks relatively good recommend resoldering joint running east-west @ center of roof.
  - trim at the top of the columns is pulling apart at the corners/wood appears sound

FIELD NOTES
HARPERS FERRY NATIONAL HISTORICAL PARK
JOHN BROWN FORT
Date: Nov. 18, '97
Inspector: A.S. DONALD / DSC-AR

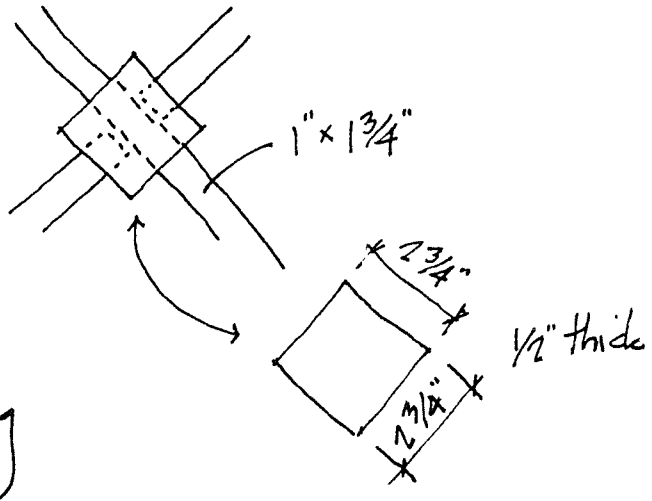
NORTH ELEVATION

- roof slate @ ridge line overlaps to north approx. 2"



- 1 broken slate noted to the east of cupola / both run down from the ridge & 3 out from cupola / slate looks pretty good on this elevation

- railing @ cupola



top plate for railing
3/4" x 3"

- gutter is lead coated copper 6" half round supported by 9 gutter pins driven into brick / high point in center sloped to both ends / gutter is in 20"± sections soldered @ each joint

FIELD NOTES
HARPERS FERRY NATIONAL HISTORICAL PARK
JOHN BROWN FORT
Date: Nov. 18, '97
Inspector: A.S. DONALD/DSC-AR

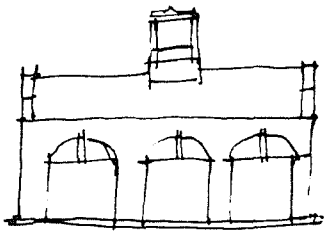
NORTH ELEVATION

- east door/window
  - termite damage @ left jamb (frame) 4 1/8" wide x 8'-2" high x 4 1/4"± thick
  - bottom rail of east window rotted @ both corners where rail meets stile.
  - board & batten door is rotted @ bottom / door is vertical random width x1" thick on exterior and diagonal random width t+g (1" thick) on interior *
  - jambs @ bottom of door opening rotted (termite damage)

* vertical boards 6 3/8" & 10 5/8" wide rotted @ base approx 11"± from sill

- simple flat panels below windows / facing door from exterior right panel / on the lower left jamb the wood is rotted @ the base and rot has started in the lower panel

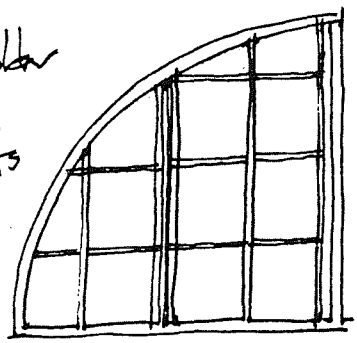
FIELD NOTES
HARPERS FERRY NATIONAL HISTORICAL PARK
JOHN BROWN FORT
Date: Nov. 18, '97
Inspector: A.S. Donald, DSC-AR



SOUTH ELEVATION

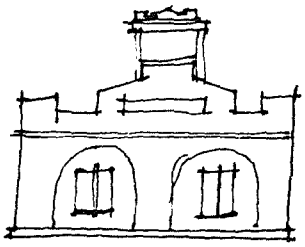
- need to take out and repoint water table stone
- slight depression @ water table needs to be filled in (regraded) water from downspouts drains down next to stone water table rather than away from structure and out into lawn area.

- common bond with header every 7th course
- need to clean off moss/vegetation from lower 5 courses of brick.
- lower 10-15 brick courses have soft mortar joints and need to be raked out and repointed.
- there are no drip edges cut into the wood sills of any of the windows on this elevation.
- the western most bottom rail of the eastern window is rotted and needs to be replaced.
- 6" gutter is in 20" sections with solder joints, high spot in middle with slope to gutters @ east & west ends & supports for gutter
- downspouts are 3" dia lead coated copper in 2'-4"± lengths 3 brackets holding downspouts in place/



half elevation of window on south

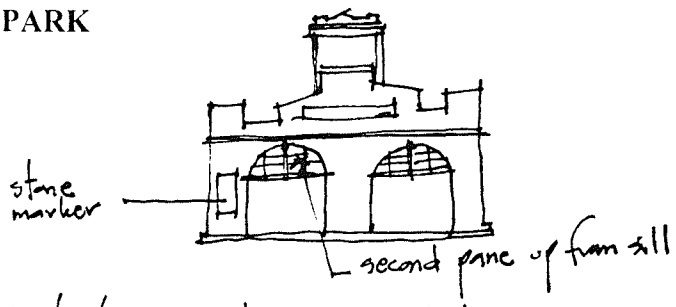
FIELD NOTES
HARPERS FERRY NATIONAL HISTORICAL PARK
JOHN BROWN FORT
Date: Nov. 18, '97
Inspector: A.S. Donald DOI-AR



EAST ELEVATION

- wood is stacked up approx 1'± high along entire elevation / this leads to damp masonry and potential breeding place for termites
- the window on the north end has termite / rot damage on the sill / the interface between the wood sill and the brick is open and should be caulked to prevent water getting to the end grain of the sill
- suggest replacing 6-12 panes of glass
- the window on the south end has rot on the bottom rail of the right sash / anticipate that joints may be rotted
- the wood pins on the north end window sash are pulling out indicating a problem @ the lower joints (i.e. bottom rail & stiles)
- masonry from brick band / above arches / to top needs to be raked out and repointed
- brick masonry 15± courses from stone water table needs to be raked out and repointed.

FIELD NOTES
HARPERS FERRY NATIONAL HISTORICAL PARK
JOHN BROWN FORT
Date: Nov. 18, 97
Inspector: A.S. Donald/DSC·AR



· **WEST ELEVATION**

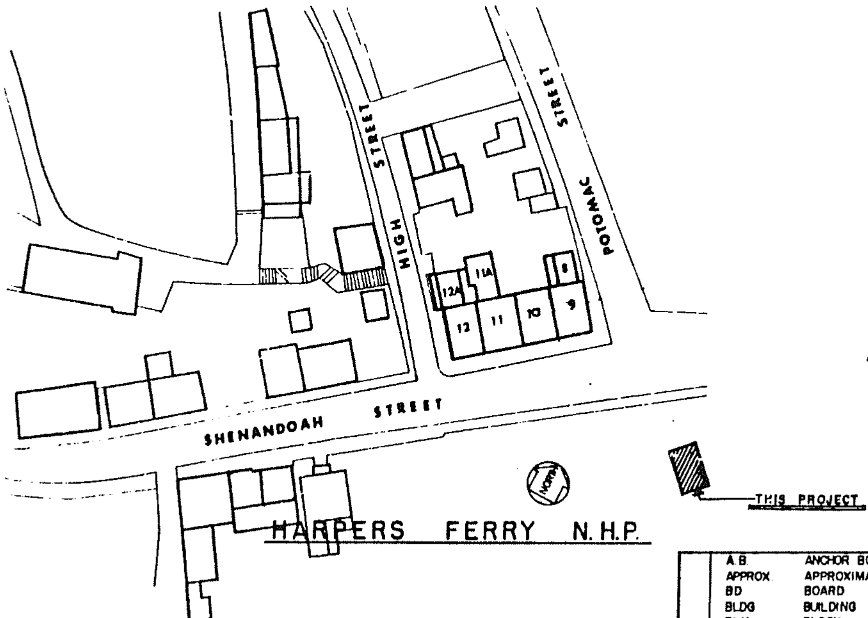
- graffiti on 1918 stone (mark H) needs to be removed. Also need to look @ remaing 4 steel pins holding stone in place / metal starting to rust and staining stone.
- masonry from brick (cont (3 courses over window arch) to top needs to be raked out and repointed.
- need to clean moss off lower 2-3 courses of brick just above water table stone
- need to rake out and repoint joints @ water table stone
- 10-15 courses of brick above water table need to be raked out and repointed / suspect flood damage is heaviest @ this point
- replace 1 broken window pane @ south side of north window.
  * second pane up from bottom rail

FIELD NOTES
HARPERS FERRY NATIONAL HISTORICAL PARK
JOHN BROWN FORT
Date:
Inspector:

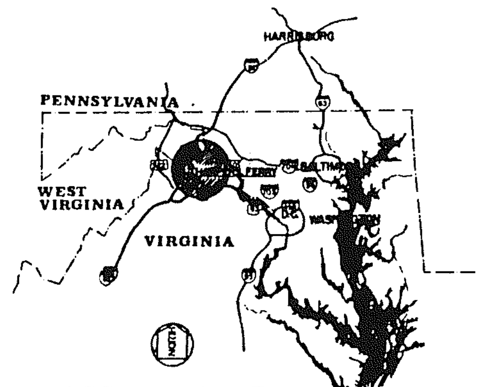
INTERIOR

- roof sheathing from interior looks very good / due to greenish color suspect CCA treated wood used in 1970's move.
- also looks like pressure treated sill plates used for roof rafters
- brick floor laid in basket weave pattern
- east side of interior used for misc. storage of materials
- minimal to no pigeon droppings spider webs minimal / interior very clean
- window stops @ side windows need to be replaced 1/2" x 2 1/2" rotted / termite damage

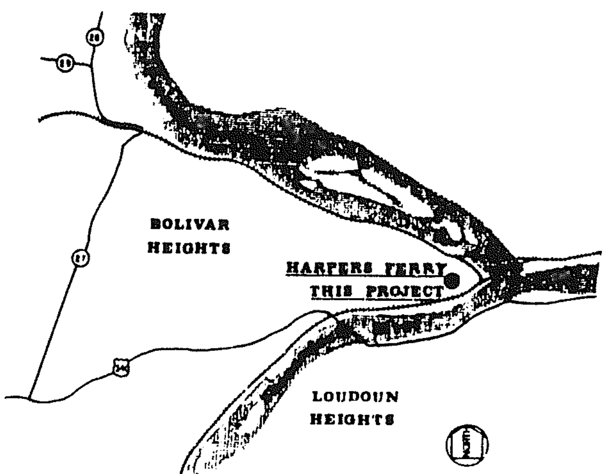
X. APPENDIX B / DRAWINGS



HARPERS FERRY N.H.P.



AREA LOCATION MAP



HARPERS FERRY N.H.P.
VICINITY MAP

INDEX TO DRAWINGS

HALF-SIZE REPRODUCTION

DAY LABOR

ABBREVIATIONS

A.B.	ANCHOR BOLT	EXT	EXTERIOR	OPP	OPPOSITE
APPROX	APPROXIMATE	EXIST	EXISTING	OPNG	OPENING
BD	BOARD	F.H	FLAT HEAD	ORIG	ORIGINAL
BLDG	BUILDING	FIN	FINISH	RM	ROOM
BLK	BLOCK	FL/FLR	FLOOR	REQ'D	REQUIRED
COL	COLUMN	FS	FULL SIZE	SECT	SECTION
CONC	CONCRETE	GA	GAUGE	SIM	SIMILAR
CONN	CONNECTION	GALV	GALVANIZE	SHT	SHEET
CONT	CONTINUOUS	HIST	HISTORIC	STL	STEEL
CONST	CONSTRUCTION	HORIZ	HORIZONTAL	STRUCT	STRUCTURAL
CR(S)	COURSE(S)	JT	JOINT	T & B	TOP AND BOTTOM
CMU	CONCRETE MASONRY UNIT	MAX	MAXIMUM	T & G	TONGUE AND GROOVE
CSK	COUNTERSINK	MET	METAL	TYP	TYPICAL
DET/DTL	DETAIL	MIN	MINIMUM	WD	WOOD
DIA	DIAMETER	M.O	MASONRY OPENING	WI	WROUGHT IRON
DWG	DRAWING	NIC	NOT IN CONTRACT		
EA	EACH	NO	NUMBER		
EL/ELEV	ELEVATION	NOM	NOMINAL		
EQ	EQUAL	NPS	NATIONAL PARK SERVICE		
EXP	EXPOSURE/EXPANSION	OC	ON CENTER		

LEGEND

SYMBOL	MATERIAL	SYMBOL	MATERIAL	SYMBOL	MATERIAL
	EXISTING CONSTRUCTION		SLATE		BLOCKING
	BRICK ARCH		EARTH		PLYWOOD
	CONCRETE MASONRY UNIT		SEALANT		POROUS FILL
	CONCRETE		STEEL		
	HARPERS FERRY SHALE		STRUCTURAL WOOD		
	CUT STONE (GRANITE)		FINISH WOOD		

CONSTRUCTION DRAWINGS

Harpers Ferry N. H. P.

Code	REVISION	Date	Initial

CONSTRUCTION DRAWING
This drawing has been prepared in compliance with the Historic Structures Report
Approved by: Jack Fish
Director, Nat. Capital... May 76
Manager, DSC ... Date 12/2/76

HISTORIC PRESERVATION TEAM

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
DENVER SERVICE CENTER

PREPARED BARLOW
DESIGNED BARLOW ESQ.
DRAWN BARLOW
CHECKED
NOV-1976
DATE

TITLE OF DRAWING: PARTIAL RESTORATION JOHN BROWNS FORT
LOCATION WITHIN PARK: LOWER TOWN
NAME OF PARK: HARPERS FERRY NATIONAL HISTORIC PARK
N.C.R. REGION — JEFFERSON COUNTY — W. VA. STATE

PG63

DRAWING NO 388 25003
PCIP PKG 118
SHEET 1 OF 13.

DATA

RECONSTRUCT CUPOLA TO DETAILS. SEE SHEETS 4, 7, 8 & 9

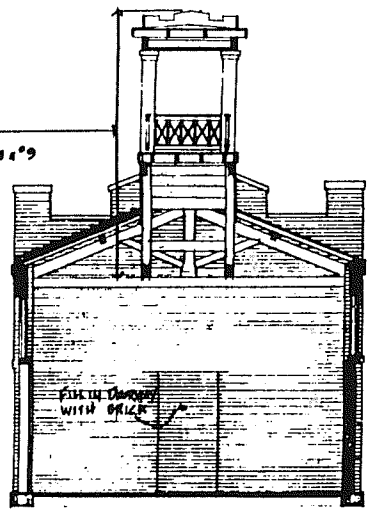
REPLACE ALL (4) RED SANDSTONE CAPS TO MATCH DETAILS OF ORIGINAL

REMOVE EXISTING CUPOLA BASE & STEPS. RECONSTRUCT CUPOLA TO DETAIL

REPAIR SASH AS REQUIRED SEE SHEET # 6

REUSE ORIGINAL HARDWARE ON DOORS

BRICK IN INTERIOR DOORWAY TO MATCH EXISTING BRICKWORK IN COURSING AND JOINTING. TOOTH ALL NEW WORK INTO EXISTING IN ORDER TO HAVE CONTINOUS COURSING

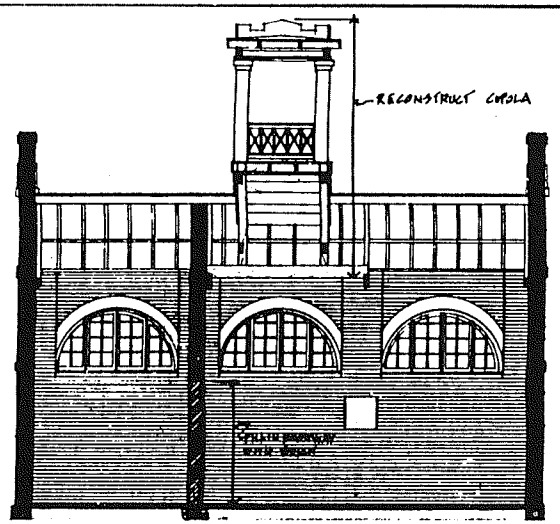


3/2 · SECTION · A—A ·
SCALE: 1/4" = 1'-0"

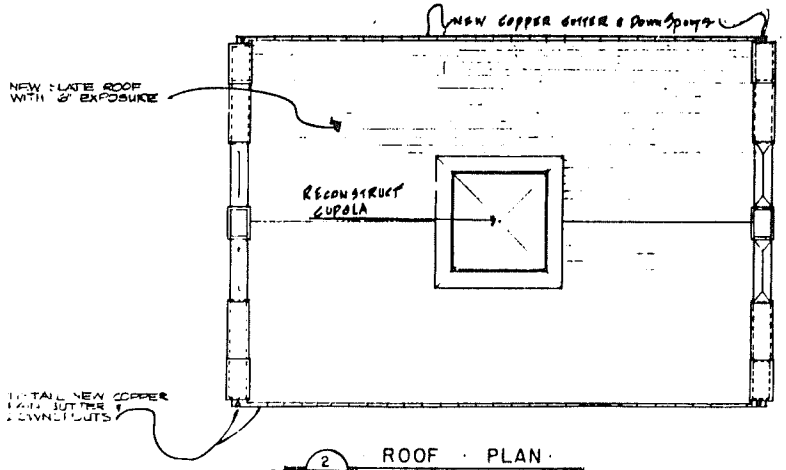
REPLACE ALL ROTTED ROOF FRAMING MEMBERS SEE FRAMING PLAN SHEET # 4

ALL INTERIOR WALLS ARE TO BE WHITE-WASHED

EXIST. BLOCK FOUNDATION BY N.P.S. TO REMAIN



4/2 · SECTION · B-B ·
SCALE: 1/4" = 1'-0"

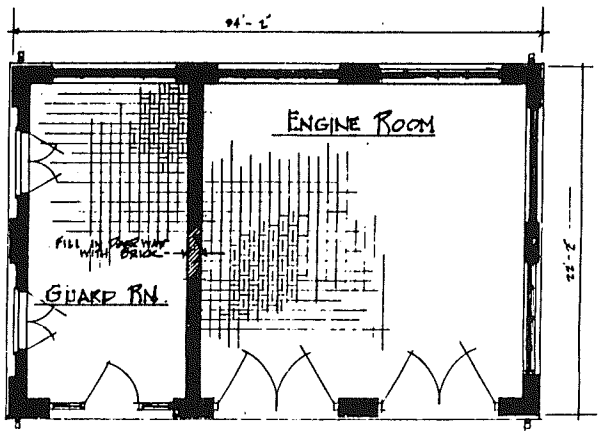


2/2 · ROOF · PLAN ·
SCALE: 1/4" = 1'-0"

REPAIR WINDOW FRAMES & SASH AS REQUIRED

RESET PORTION OF BRICK FLOORING AND REPACK ALL JOINTS WITH SAND

PRESENT ENTRANCE DOORS ARE TO BE RETAINED. ALL NEW HARDWARE TO BE REPLACED WITH ORIGINAL HARDWARE IN STORAGE.



1/2 · FLOOR · PLAN ·
SCALE: 1/4" = 1'-0"

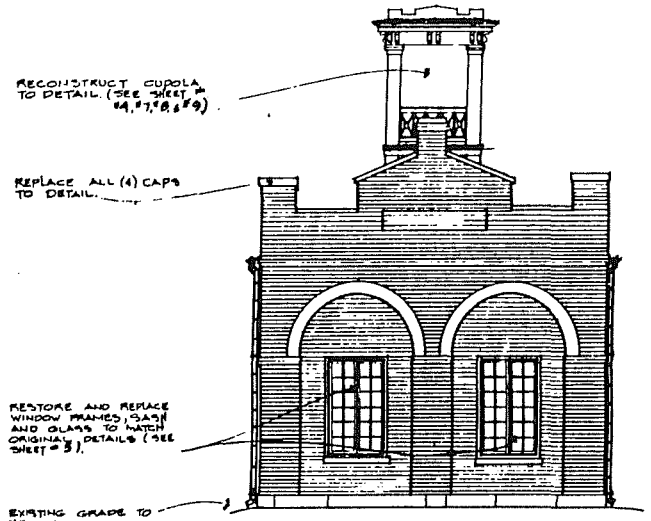
Contractor shall verify all dimensions and site conditions prior to the start of any work. Notify Architect of any discrepancy.

PARTIAL RESTORATION

PLANS & SECTIONS - JOHN BROWN'S FORT

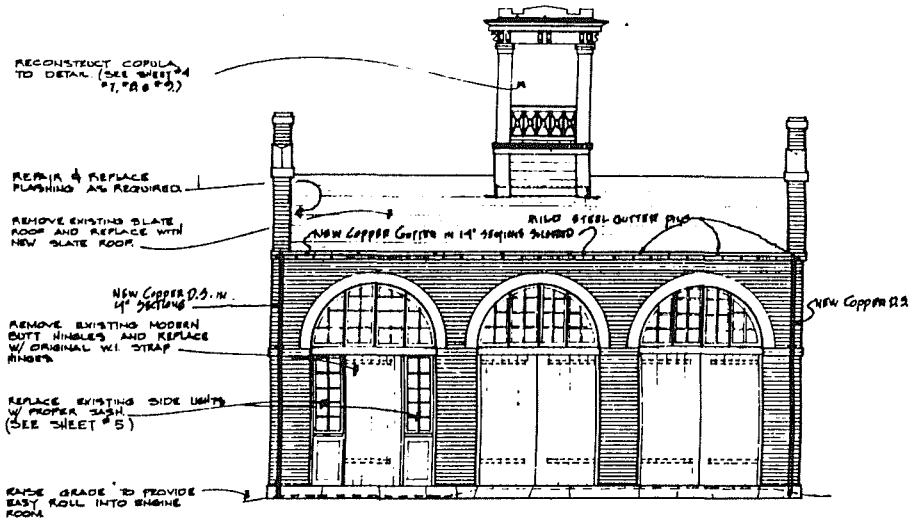
SCALE 1/4"=1'-0"

PREPARED	W.L. BARLOW
DESIGNED	W.L. BARLOW
DRAWN	W.L. BARLOW
CHECKED	
DATE	NOV. 1976
DRAWING NO.	336 83,003
SHEET	2 OF 12



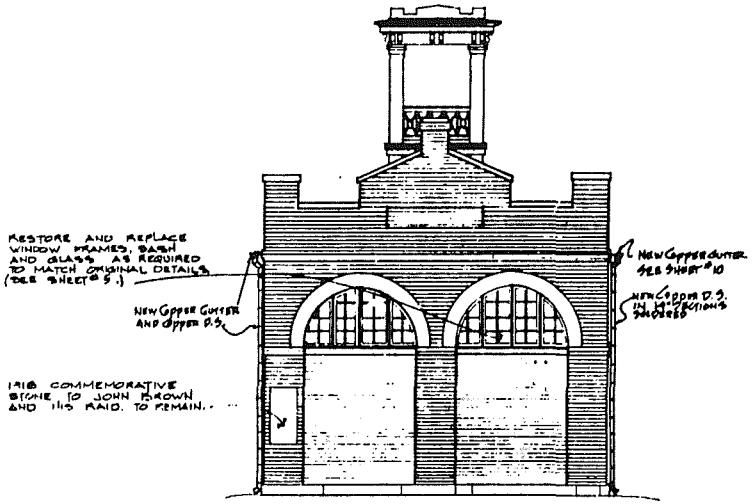
· EAST · ELEVATION ·

SCALE: 1/4" = 1'-0"



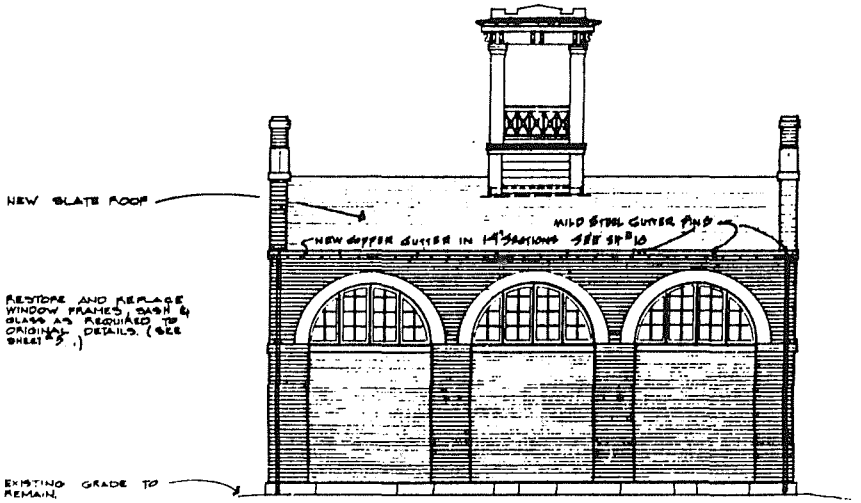
· NORTH · ELEVATION ·

SCALE: 1/4" = 1'-0"



· WEST · ELEVATION ·

SCALE: 1/4" = 1'-0"



· SOUTH · ELEVATION ·

SCALE: 1/4" = 1'-0"

PGVS

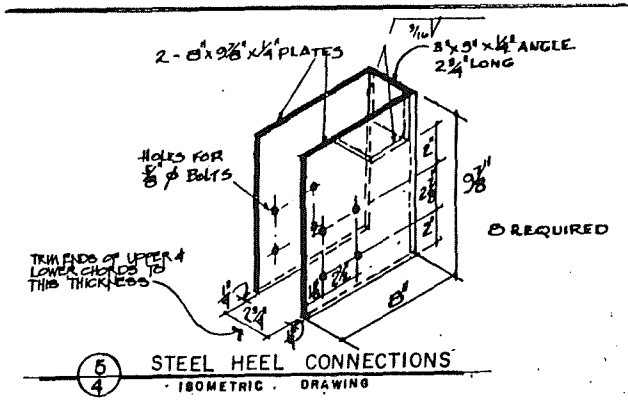
PREPARED W.L. BARLOW
DESIGNED W.L. BARLOW
DRAWN W.L. BARLOW
CHECKED
NOV. 1978 DATE

DRAWING NO. 308 28,005
PHS 80 12
SHEET 3 OF 13

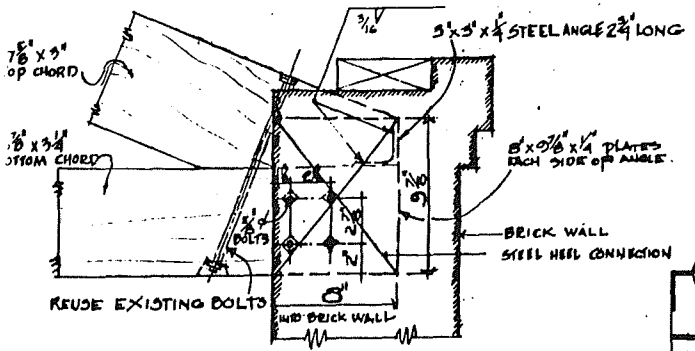
PARTIAL RESTORATION

EXTERIOR ELEVATIONS - JOHN BROWN'S FORT

SCALE 0 5 10 FEET 1/4"=1'-0"



5/4 STEEL HEEL CONNECTIONS
· ISOMETRIC · DRAWING



4/4 DETAIL OF TRUSS HEEL
SCALE = 3" = 1'-0"

REPLACE RAFTERS ROTTED & BROKEN AS REQUIRED.

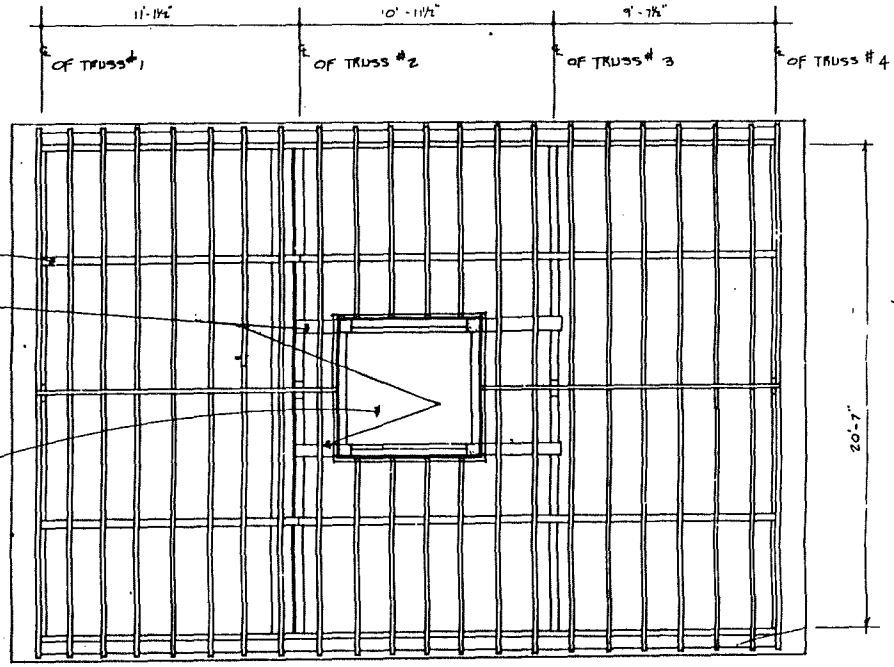
NEW 4x6 PURLIN (OVER GUARD ROOM ONLY)

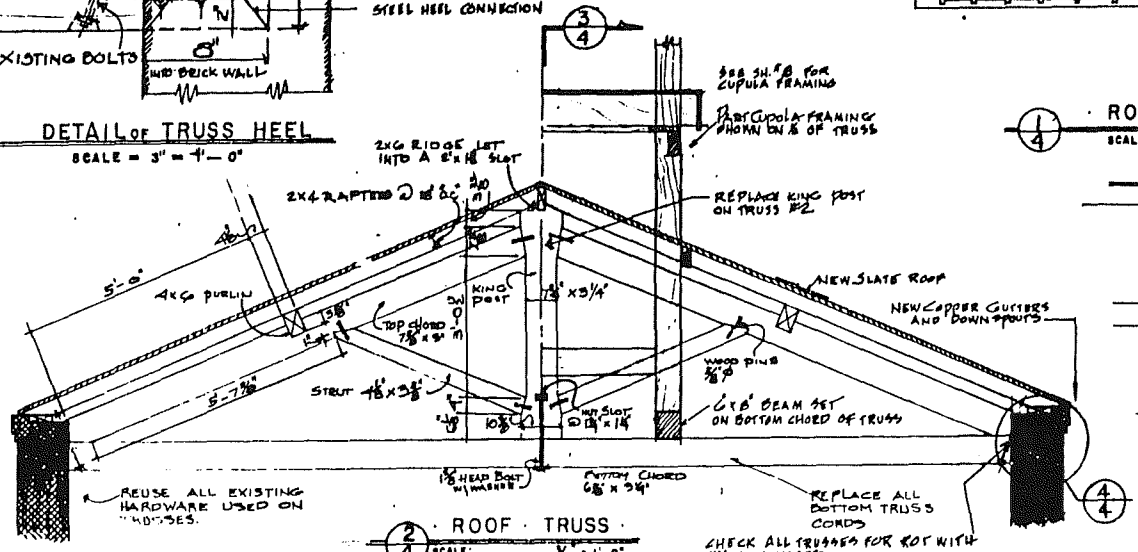
NEW 6"x8" BEAMS SET ON BOTTOM CHORDS OF TRUSSES #2 & #3

REPLACE ROOF SHEATHING AS REQUIRED.

REMOVE REMAINING CUPOLA BASE & STEPS AND RECONSTRUCT CUPOLA FRAMING TO DETAILS SEE SHT.# 10 & 11.

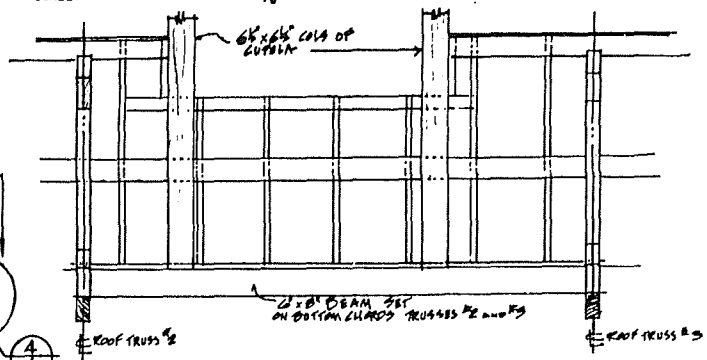
REPLACE ALL LOWER TRUSS CORDS





2/4 · ROOF · TRUSS ·
SCALE: ¾" = 1'-0"

1/4 · ROOF · FRAMING · PLAN ·
SCALE: ⅛" = 1'-0"



3/4 · SECTION ·
SCALE: 3/4" = 1'-0"

NOTE: ALL DEMENSIONS GIVEN ARE ACTUAL.

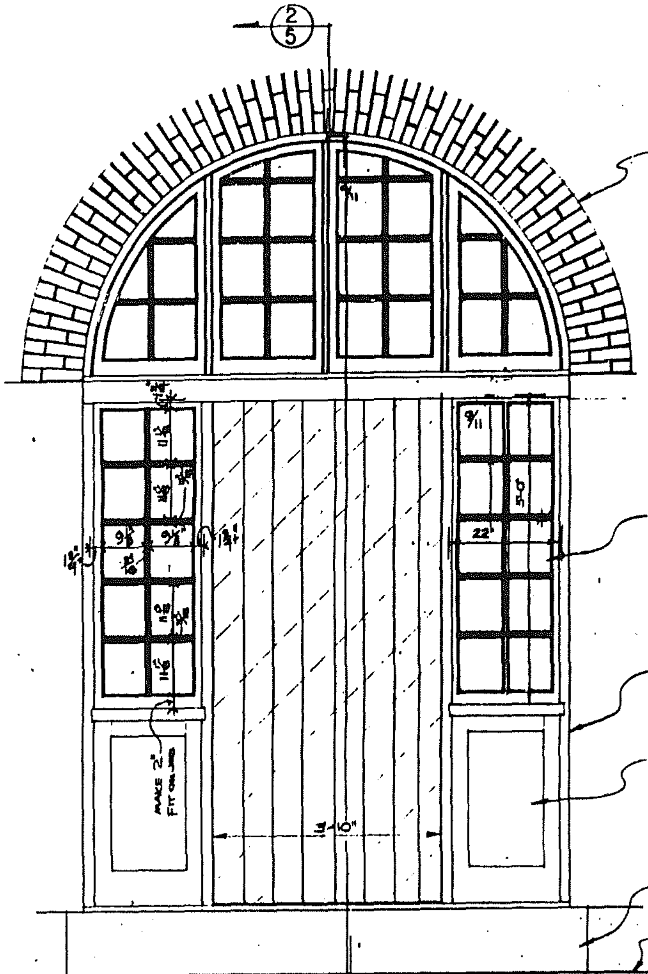
NOTE: DISMANTLE THE EXISTING TRUSSES WITH CARE. EXAMINE TRUSS JOINTS. OBSERVE METHODS OF DOWELING AND FASTENING. THE ARCHITECT SHALL BE PRESENT AT THIS TIME, AND WILL DETERMINE IF ANY REVISIONS TO DRAWINGS SHOWN ABOVE, TO TRUSS CONNECTIONS, AND FASTENING DETAILS, BE NECESSARY.

PARTIAL RESTORATION

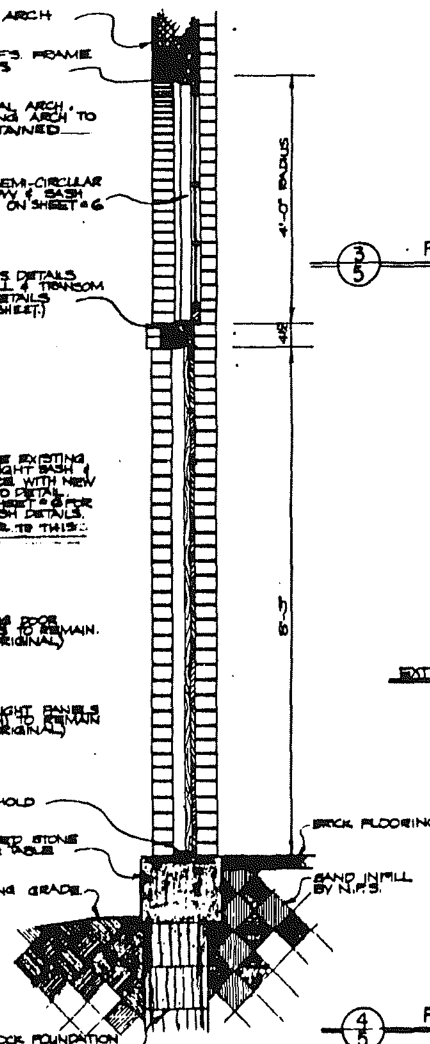
ROOF FRAMING — JOHN BROWN'S FORT

K-66

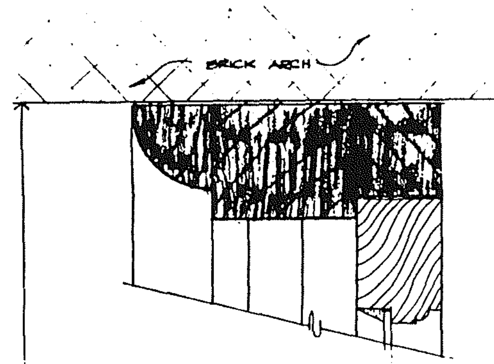
PREPARED W.L. BARLOW DESIGNS	DRAWING NO. 585 28,008
W.L. BARLOW DRAWN	FILE NO. 113
W.L. BARLOW CHECKED	SHEET 4
NOV. 1974 DATE	OF 13



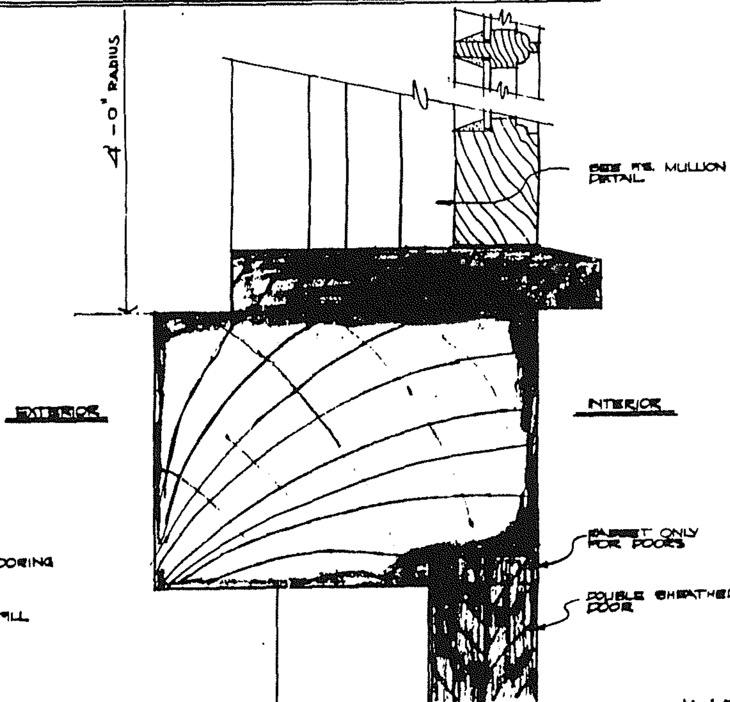
1/5 · GUARD · ROOM · BAY · ENTRANCE · ELEVATION ·
SCALE: 1" = 1'-0"



2/5 SECTION



3/5 · F.S. · SEMICIRCULAR · WINDOW · FRAME · DETAIL



4/5 F.S. WINDOW · SILL · & · DOOR · TRANSOM · DETAIL

PARTIAL RESTORATION

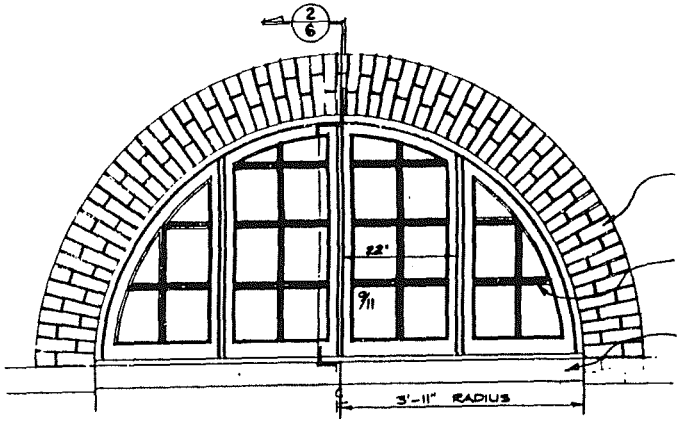
ENTRANCE DETAILS – JOHN BROWN'S FORT

SCALE 1" = 1'-0"

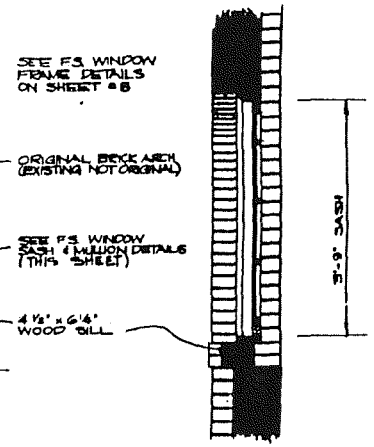
PREPARED W.L. BARLOW
DESIGNED W.L. BARLOW
DRAWN W.L. BARLOW
CHECKED
JAN. 1976 DATE

DRAWING NO. 385 / 25,003
SHEET 5 OF 12

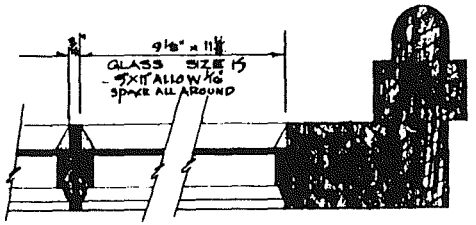
Pg 67



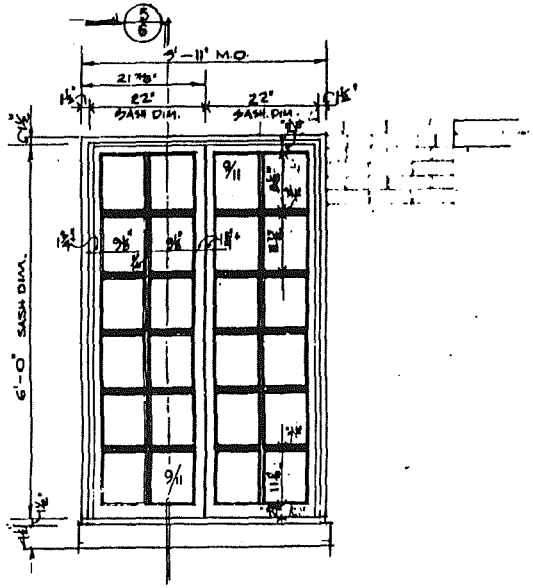
1/6 · SEMI-CIRCULAR · WINDOW ·
SCALE: 1" = 1'-0"



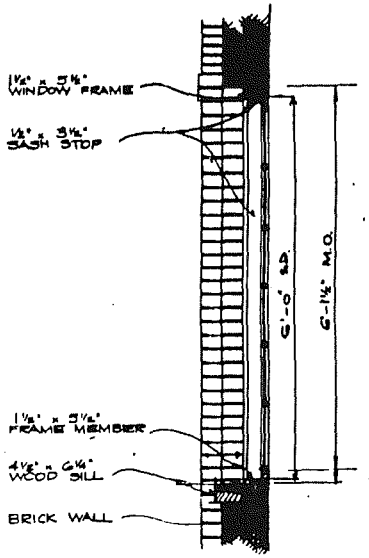
2/6 · WINDOW · SECTION ·
SCALE: 1" = 1'-0"



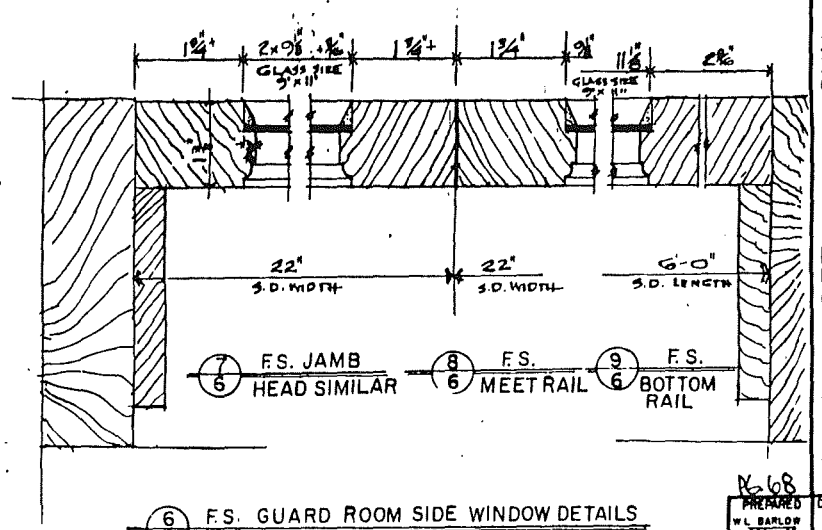
3/6 · F.S. · WINDOW · SASH · & · MULLION · DETAIL ·



4/6 · GUARD · ROOM · SIDE · WINDOW ·
SCALE: 1" = 1'-0"



5/6 · WINDOW · SECTION ·
SCALE: 1" = 1'-0"



7/6 F.S. JAMB HEAD SIMILAR · 8/6 F.S. MEET RAIL · 9/6 F.S. BOTTOM RAIL

6/6 F.S. GUARD ROOM SIDE WINDOW DETAILS

PARTIAL RESTORATION

WINDOW DETAILS – JOHN BROWN'S FORT

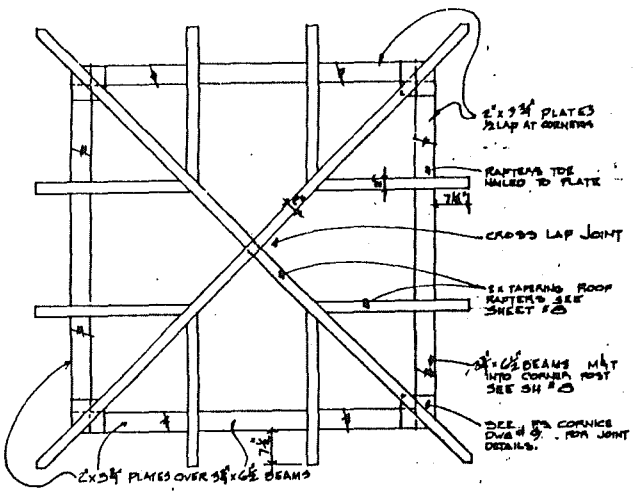
SCALE 3" = 1'-0" 0 1'

PREPARED W.L. BARLOW DESIGNED W.L. BARLOW DRAWN W.L. BARLOW CHECKED NOV. 1974

DRAWING NO. 395 2-8007

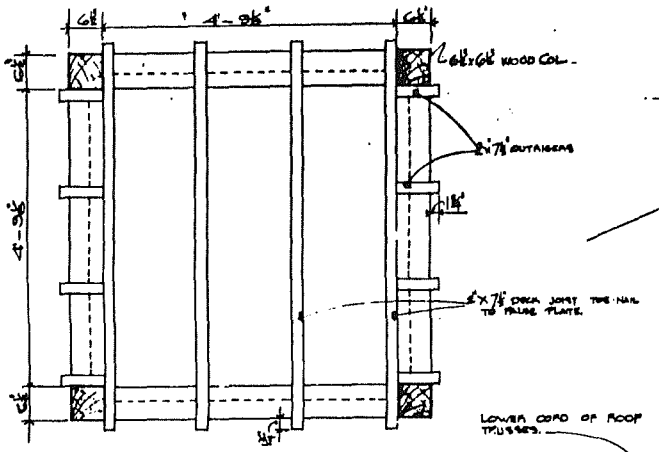
SHEET 6

68



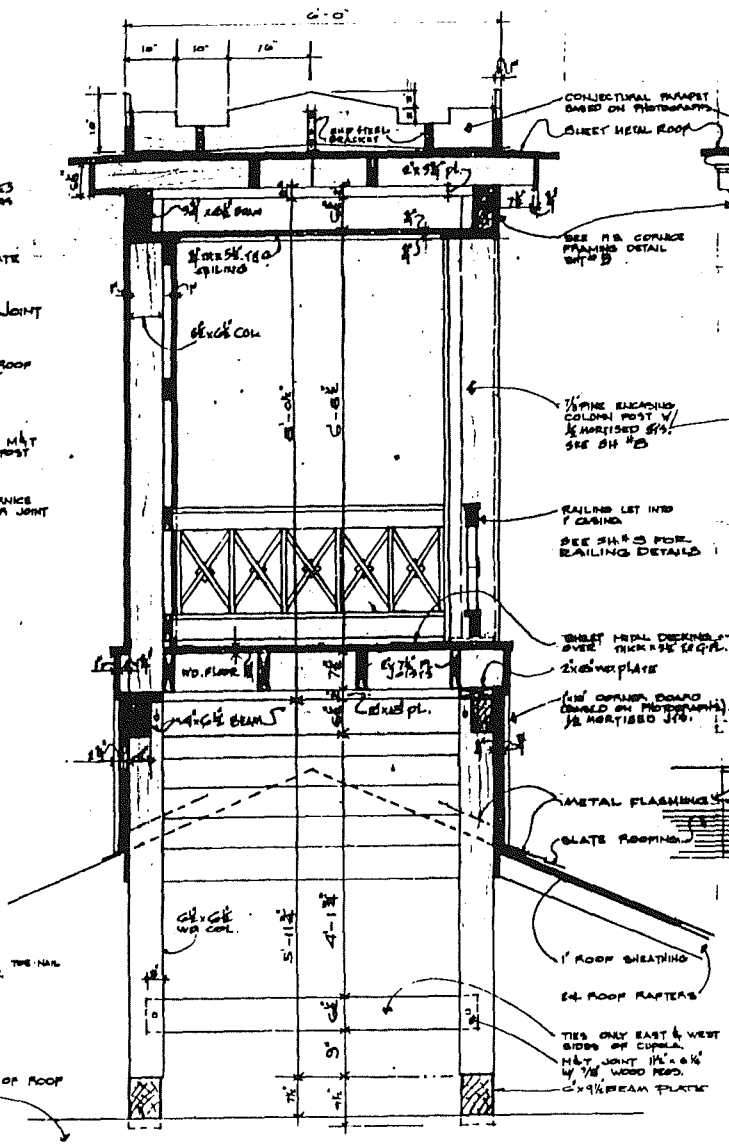
· CUPOLA · ROOF · FRAMING · PLAN ·

SCALE: 1" = 1'-0"



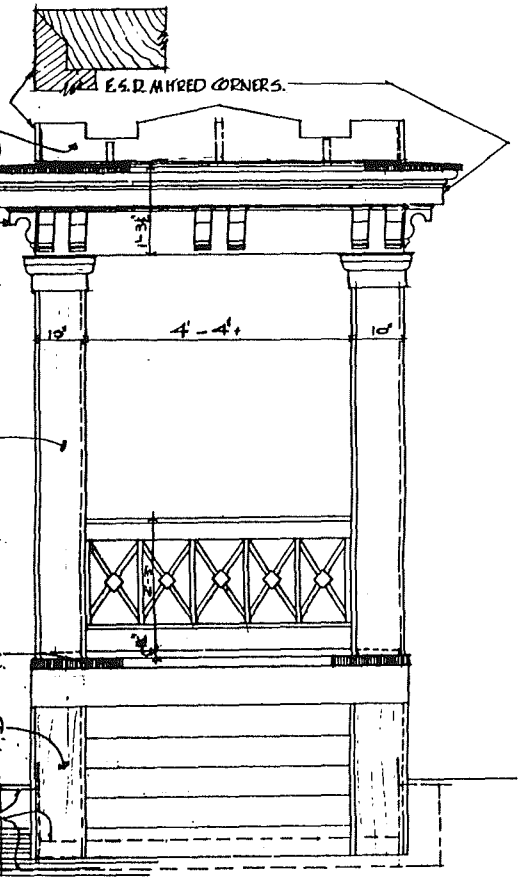
· CUPOLA · DECK · FRAMING · PLAN ·

SCALE: 1" = 1'-0"



· CUPOLA · SECTION · & · FRAMING · DETAILS ·

SCALE: 1" = 1'-0"



· CUPOLA · ELEVATION · (ALL FOUR ELEVATIONS SIMILAR.

SCALE: 1" = 1'-0"

Note:
ALL DIMENSIONS GIVEN ARE ACTUAL.

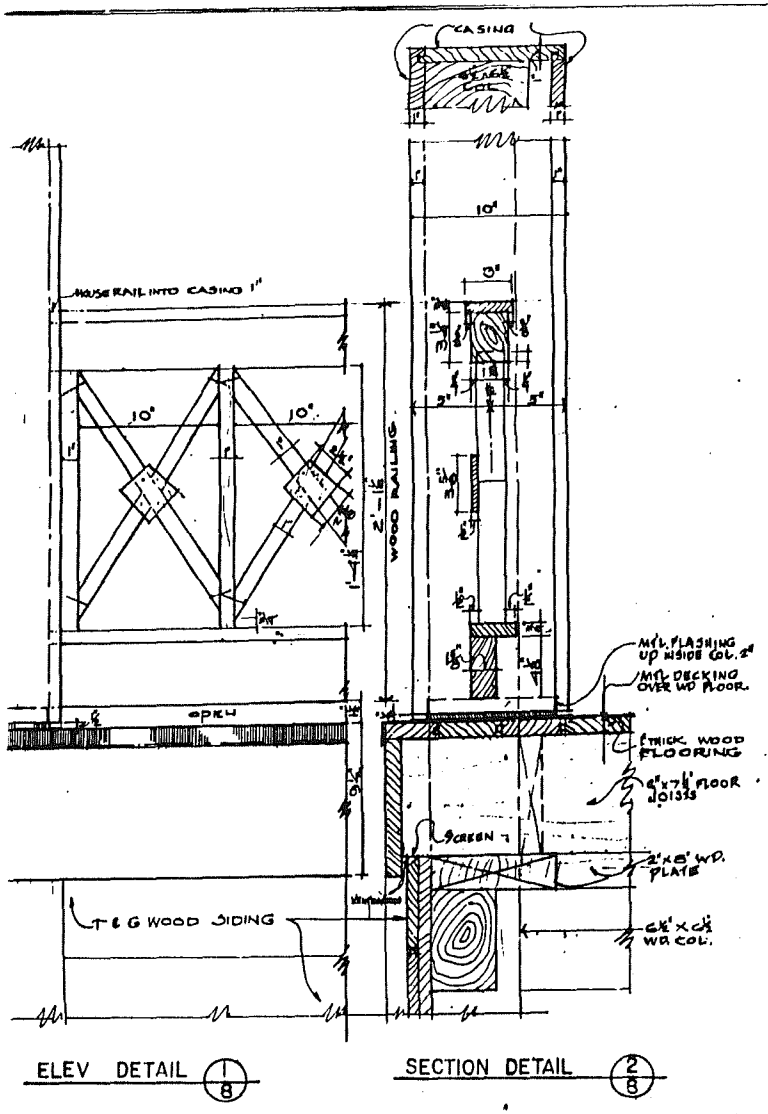
PARTIAL RESTORATION.

CUPOLA — JOHN BROWN'S FORT

SCALE: 1" = 1'-0"

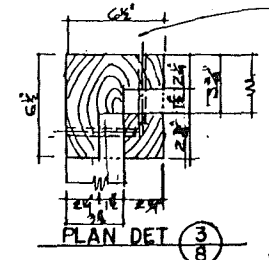
Pg. 69

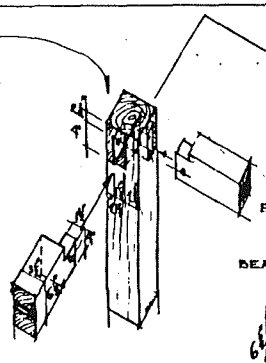
PREPARED	DRAWING NO.
W.L. BARLOW DESIGNED	388 25003
W.L. BARLOW DRAWN	PRS NO 118 / SHEET 7
W.L. BARLOW CHECKED	OF 13
NOV. 1976 DATE	



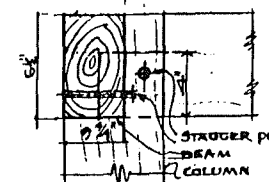
ELEV DETAIL (1/8)

SECTION DETAIL (2/8)

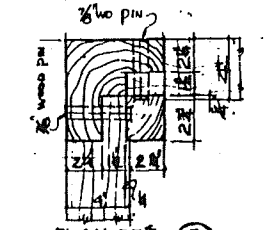




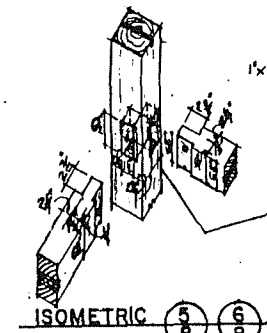
ISOMETRIC (3/8) (4/8)



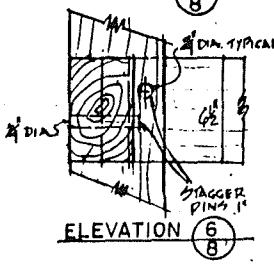
ELEV DET (4/8)



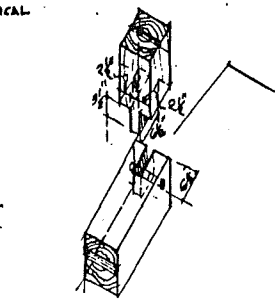
PLAN DET (5/8)



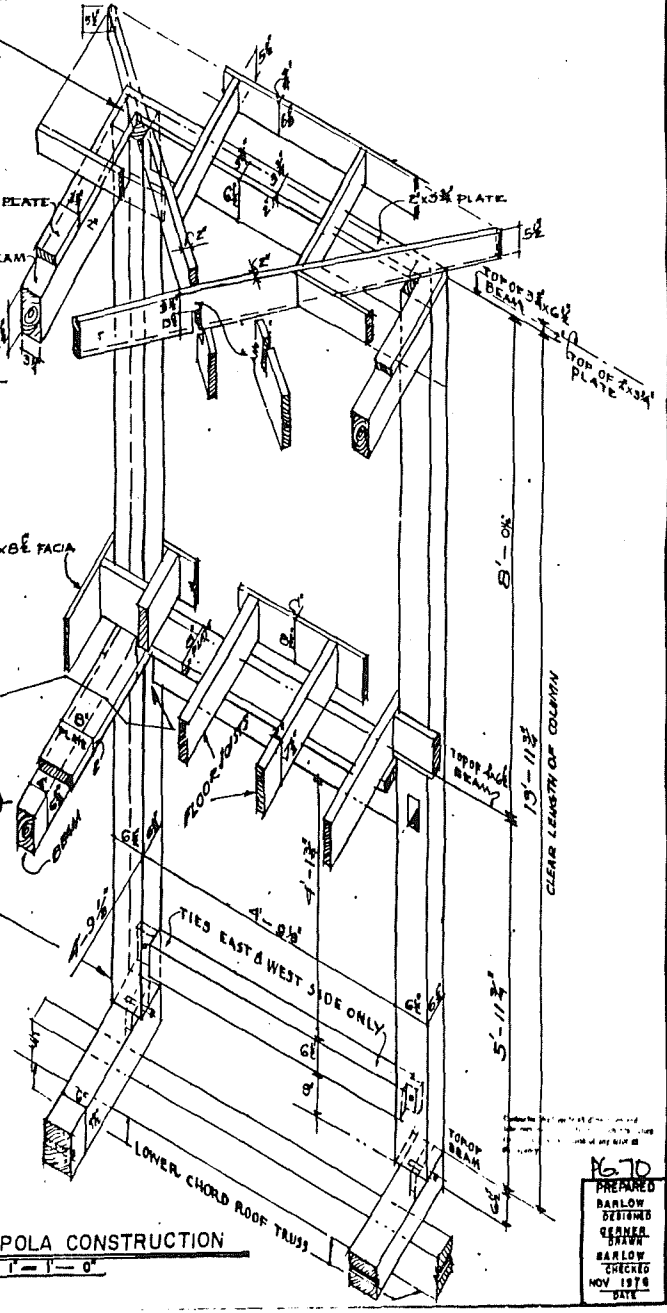
ISOMETRIC (5/8) (6/8)



ELEVATION (6/8)



ISOMETRIC (7/8)



ISOMETRIC OF CUPOLA CONSTRUCTION (8/8)

SCALE 1" = 1'-0"

DRAWINGS OF CUPOLA RAILING DETAILS (9/8)

SCALE 3" = 1'-0"

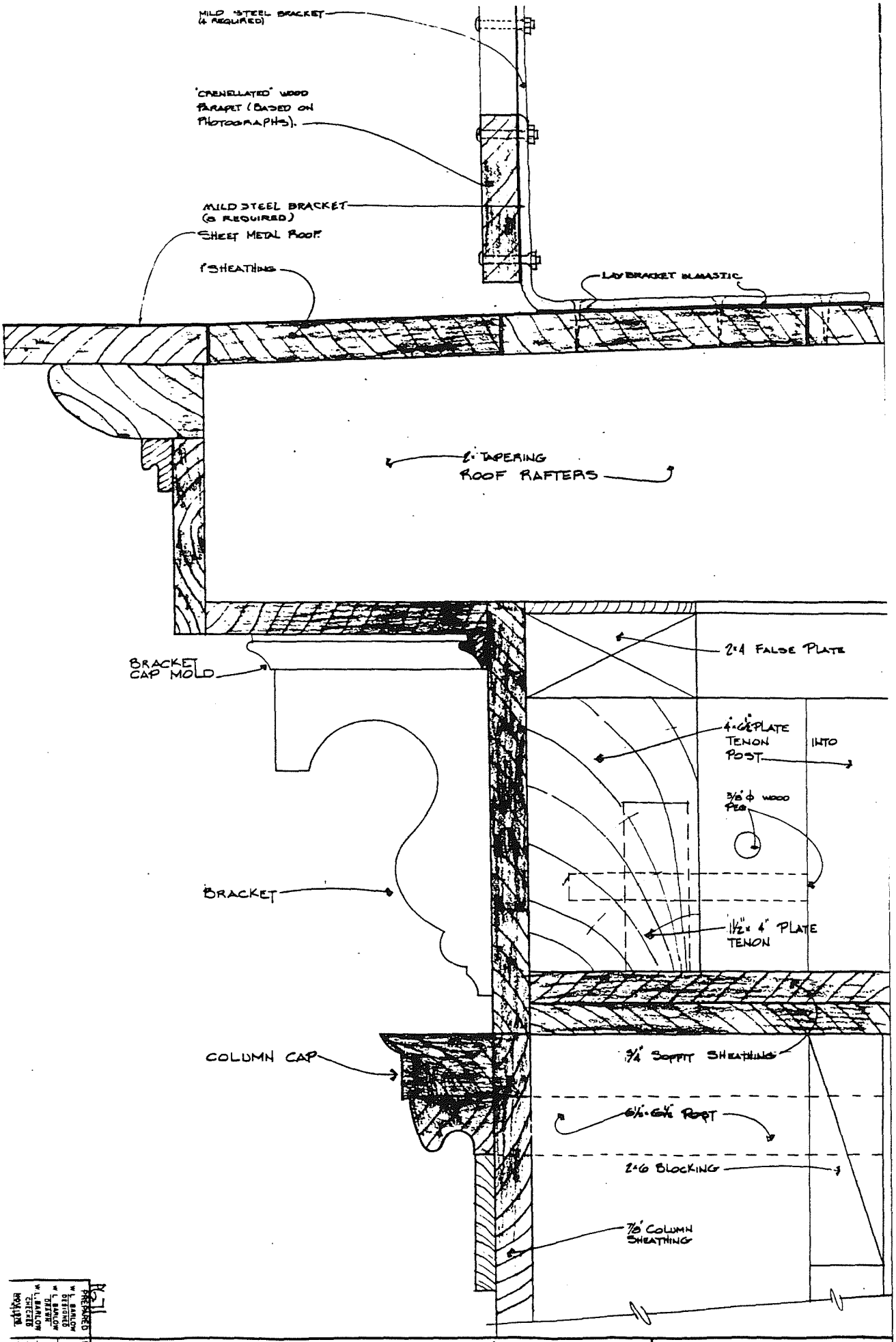
PARTIAL RESTORATION

CUPOLA ISOMETRIC JOHN BROWNS FORT

SCALE 3" = 1'-0"

A670

PREPARED BARLOW	DRAWING NO. 382 25003
DESIGNED	
DRAWN GEARNER	FILE NO.
CHECKED BARLOW	SHEET 8
DATE NOV 1976	OF 13

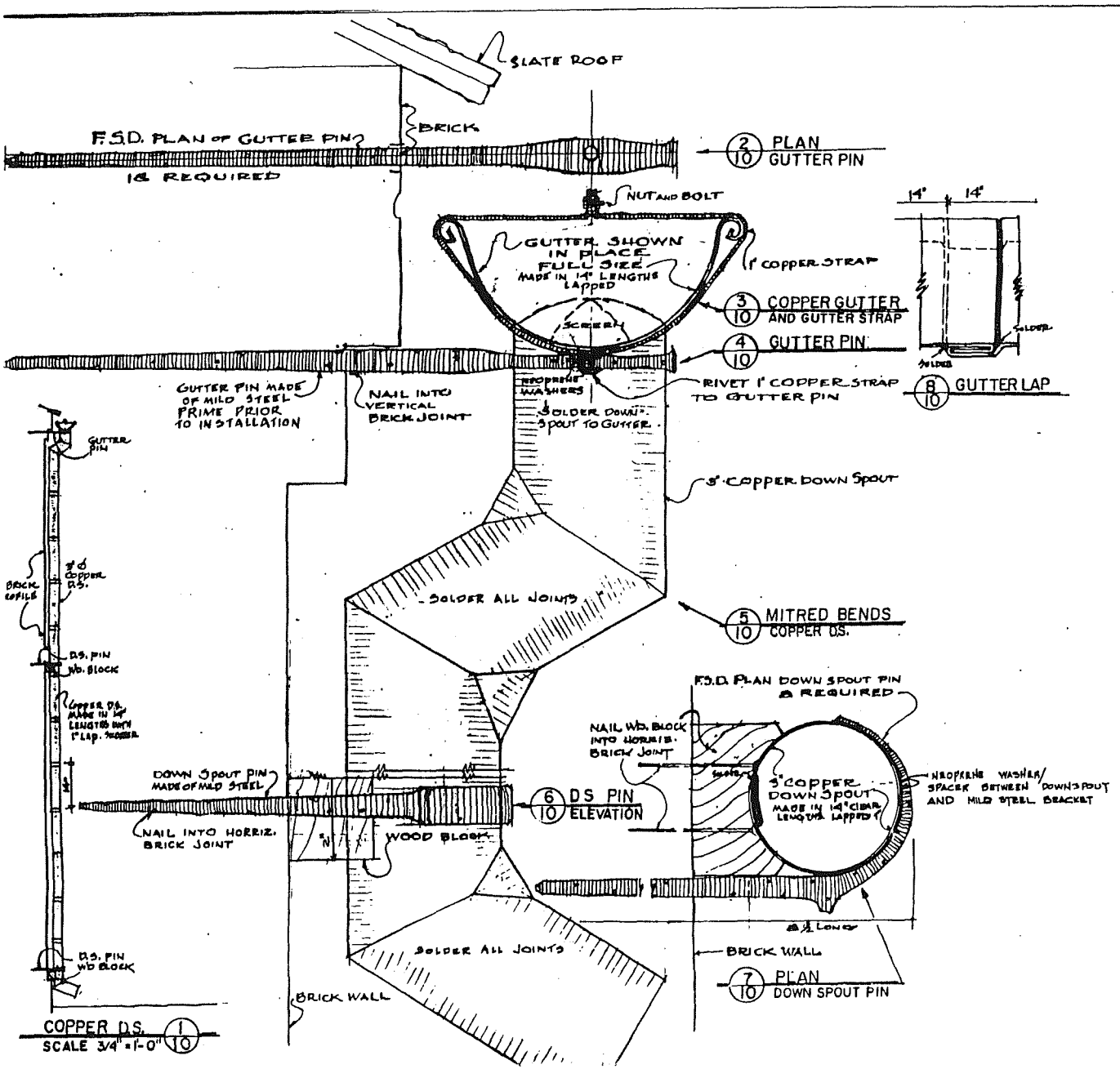


PREPARED W. L. BARLOW
DRAWN W. L. BARLOW
CHECKED W. L. BARLOW
DATE 1975
SCALE 1" = 1'-0"
SHEET 9 OF 13
DRAWING NO. II

COPULA CORNICE — JOHN BROWN'S FORT

SCALE: 1 2 3 INCHES FULL SIZE

PARTIAL RESTORTION



PARTIAL RESTORATION

GUTTERS & DOWN SPOUTS-JOHN BROWNS FORT

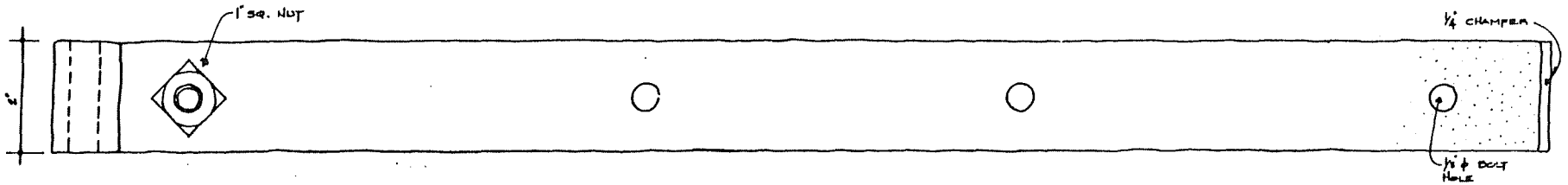
SCALE 0 1 2 3 INCHES FULL SIZE

PREPARED BARLOW DESIGNED BENNER DRAWN BARLOW CHECKED NOV 1978

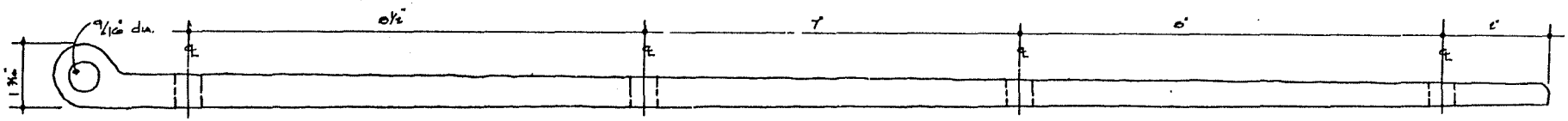
DRAWING NO. 388 28003

PRE NO. 13

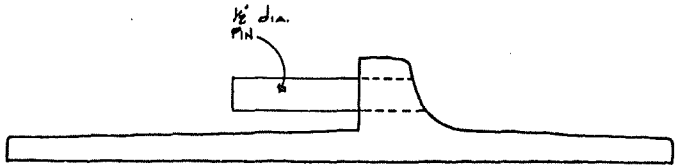
SHEET 10



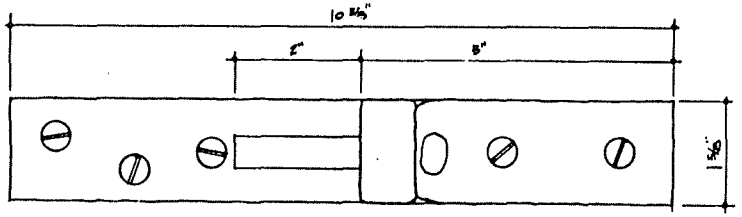
· F.S. · W.I. · STRAP · HINGE — TOP · ELEVATION · 1/11



· F.S. · W.I. · STRAP · HINGE — SIDE · ELEVATION · 2/11



F.S.- W.I. · HINGE · PINTLE — SIDE · ELEVATION · 3/11



· F.S. — W.I. · HINGE · PINTLE · TOP · ELEVATION · 4/11

PARTIAL RESTORATION

HARDWARE — JOHN BROWN'S FORT

SCALE: 3 INCHES 2 1 0 FULL SIZE

PREPARED W.L. BARLOW	DRAWING NO. 388 #8,003
DESIGNED W.L. BARLOW	
DRAWN W.L. BARLOW	PKG NO. 118
CHECKED	SHEET 11 OF 13
NOV 1976 DATE	

B. Underlayment: ASTM D250. Thirty pound asphalt saturated asbestos felt.

C. Nails: Hot dipped galvanized or aluminum, of sufficient length and holding power, as recommended by the shingle manufacturer.

D. Lead Coated Copper (For use in flashing): Cold rolled copper, meeting requirements of ASTM D370, coated on both sides with not less than 8 pounds per 100 square feet applied in accordance with ASTM B 101, Type I, Class A.

EXECUTION:

A. Slating:

1. The entire surface of all roofs, unless otherwise specified, and all other surfaces as indicated on the drawings, shall be covered with slate as herein specified, in a proper and watertight manner.

2. The slate shall project 1½'' at the brick cornice and shall be laid in horizontal courses with 8-inch exposure, and each course shall break joints with the preceding one at least 4-½ inches. Slates at the cornice line shall be doubled using same thickness slate for under-eaves at first exposed course. Under-eave slate to be approximately 3 inches longer than exposures of first course.

3. Slates overlapping sheet metal work shall have the nails so placed as to avoid puncturing the sheet metal. Exposed nails shall be permissible only in top courses where unavoidable.

4. Neatly fit slate around all vertical surfaces.

5. Nails shall not be driven so far as to produce a strain on the slate.

6. Cover all exposed nail heads with plastic cement. Ridge slates shall be laid in plastic cement spread thickly over unexposed surface of under courses of slate, nailed securely in place and carefully pointed with plastic cement.

7. Build in and place all flashing pieces.

8. Upon completion, all slate must be sound, whole, clean, and the roof shall be left watertight and neat in every respect, and subject to the Contracting Officer's approval.

B. Roofing Felt:

1. On all surfaces to be covered with slate, lay felt in horizontal layers with joints lapped towards the eaves at least 2 inches and well secured along laps and at ends as necessary to properly hold the felt in place and protect the structure until covered with the slate. All felt shall be preserved unbroken, tight, and whole.

2. Felt shall lap all ridges at least 12 inches to form double thickness and shall lapped 2 inches over metal flashing.

C. Flashing: Lead coated copper for use in flashing shall be secured in place over 36 pound felt and as shown on drawings.

[illegible]

GENERAL

Samples: Two 12-inch by 12-inch samples of each sheet metal material. Show pattern, finish, color, and thickness.

B. Job Conditions:

1. Determine that surfaces are smooth and clean to extent required for sheet metal work. Correct or report defective surfaces to the Contracting Officer. Verify regists, vents, and surfaces to receive sheet metal are installed and free of intrusions.

2. Before commencing work, verify shapes and dimensions of surface to be covered. Do not begin work until surface construction, including all projections, is installed.

TERIALS

Sheet Metal: Lead coated copper. ASTM B101, Type I, Class A, soft or hard temper, copper sheets, cold rolled, weight 24 ounces per square feet. Exclusive of lead coating.

Fasteners: Screws. FS FF-S-107, self-tapping sheet metal type, or equal.

ECUTION

A. Installation.

1. General: Install work watertight, without waves, warps, buckles, fastening stresses or distortion, allowing for expansion and contraction. Hem exposed edges; edge bottom edges of exposed vertical surfaces to form drips.

2. Regists: Install in accurate locations, straight, in-line, and with leak proof joints.

3. Soldering: Clean and flux metals prior to soldering; sweat solder completely through seam width.

4. Roof Counterflashing: Overlap base flashing 4 inches minimum. Install bottom edge tight against base flashing; lap seam vertical joints 3 inches minimum; apply sealant. Miter, lap seam, and close corner joints with solder or sealant.

5. Base Flashing: Extend flashing from 2 inches above top edge of base shingle to 1-½ inches above butt edge of covering edge of shingle. Extend up vertical surface 8 inches minimum and onto roofing 4 inches minimum. Install flashing under each shingle course; secure top edge of flashing by nailing to substrate. At chimneys, roof hatches, and skylights, extend up vertical surface 8 inches minimum and onto roofing 4 inches minimum. Solder lap vertical seams; miter and solder lap corners.

GUTTERS AND DOWNSPOUTS

1. GENERAL

A. The work of this section consists of installing gutters and downspouts of a historic design.

B. See Section 05701, Wrought Iron-19th Century for related work.

2. MATERIALS

A. Gutters and downspouts to be copper cold rolled, sheet, 24 ounces per square foot. Length of gutter sections, 14''.

B. Washers - Neoprene.

C. Flux for copper: Approved commercial brand. No acid.

D. Solder for copper: ASTM B32. 50 percent lead and 50 percent block tin.

E. Leader head screens: 14 gage copper wire mesh. ½'' by ½''. Installed per drawings.

3. EXECUTION

A. Installation: In accordance with manufacturer's instructions and recommendations and Sheeta architectural sheet metal specifications, hangers and fasteners, spaced as shown on drawings. Support and anchor each unit as shown with lines and grades accurate and true in alignment and location.

B. Soldering: Wire brush surfaces to be soldered. Use well heated coppers to heat sheet and sweat completely through full width of seam. Seam shall show a minimum of 1 inch of evenly flowed solder. Solder in flat position when possible. Seams on slopes steeper than 45 degrees, solder a second time.

C. Neoprene washers: To be installed so that none of the mild steel gutter brackets, downspout brackets come in contact with copper.

FINISH HARDWARE

1. GENERAL

A. All current hardware used on the building is to be removed and replaced with the originals now in storage and reproductions of missing hardware.

B. Final hardware selection will be made by the architect.

2. MATERIALS

A. Historic cast iron strap hinges and pintles now in storage by the park will be used on all doors.

B. 3'' cast iron butt hinges will be used on both casement windows in the Guard Room. (Four pair required).

C. Iron bolts for Guard Room windows; 1'' X 4'' with keeper type #4. Manufactured by Ball & Ball, 463 W. Lincoln Hwy. Exton, Pa. 19341 (Eight required).

D. Door bolts for Engine Room doors to be X-667-C with #3 type keeper, 18'' X 1 3/4'' (Four required).

E. Door hasps required for the Guard Room door and the Engine Room doors will be reproduced for mild steel to imitate cast iron. Design will be selected by the project architect.

3. EXECUTION

Install all hardware as directed by project supervisor.

SEALANTS

1. GENERAL

A. Description: The work of this section consists of providing sealants around exterior openings.

B. Quality Assurance: Standards, Federal Specifications (FS) and manufacturers' printed recommendations.

2. MATERIALS

SEALANT: FS TT-S-227, Type II, and FS TT-S-230, Type II. Synthacalk GC-8, one part polysulfide base synthetic rubber or Synthacalk GC-6, two part polysulfide base synthetic rubber, manufactured by Pecora Chemical Corporation, 300-400 West Sedgley Avenue, Philadelphia, Pennsylvania 19140, or approved equal. Colors shall match adjacent materials, as approved.

3. EXECUTION

3-1 Application: In joints, apply with hand caulking or air pressure gun using proper size nozzle. Joints up to 1/2 inch wide, depth, same as width. In joints 1/2 inch and wider, depth, 1/2 inch minimum. Tool joint surface to compress compound into joint insuring complete contact with surface to be sealed and a watertight joint. Remove excess materials leaving joint smooth and even.

SPECIFICATIONS — JOHN BROWN'S FORT — PARTIAL

76.74

PREPARED W.L. BARLOW
DESIGNED W.L. BARLOW
DRAWN W.L. BARLOW
CHECKED
NOV. 1976 DATE

DRAWI 38 25,

PKG NO. 115

MASONRY RESTORATION

1. GENERAL

A. Description: The work of this section consists of closing in the present masonry opening between the guard and engine rooms, the repair of brick around the restored trusses and repainting of the interior walls.

B. Product Handling: Store mortar materials in a dry place under cover to prevent damage, permitting air circulation.

2. MATERIALS

A. Historic brick: Sound, hard, no chips with true edges. Match existing in size, shape, and general appearance.

B. Mortar: 1 measure of white portland cement; 1 1/2 measure of high plasticity lime; 7 measures of washed sand, match color of existing.

3. EXECUTION

A. Preparation of interior walls: Remove foreign material, loose mortar, and stone; rake out all joints to sound surface; flush raked out joints and voids with clean water where stone is removed.

B. Mixing mortar for pointing: Match existing mortar by taking an unweathered sample from a joint within existing wall. Establish the color from the aggregate used. Mix all materials by volume, dry as can be handled, in a mechanical mixer until thoroughly combined. Just prior to pointing, mix into the dry mix only enough water to make mortar workable. Use mortar within 30 minutes after adding water. Temperature is 80 degrees F., use within 2 hours; discard any remaining mortar. Retempering within these limits will be permitted only as necessary to maintain workability. Use no calcium admixtures or antifreeze chemicals.

C. Pointing brick joints: Roughen surface of joints for bonding of new material to existing. Apply mortar, wetted slightly, into the joint under sufficient pressure to assure a solid joint. Brick joints to be tooled as shown on drawings.

WROUGHT IRON - 19TH CENTURY

1. GENERAL

A. Mild steel items used to simulate 19th century wrought iron work shall be quality produced and approved.

B. Fabricate all mild steel items as per full size details

C. Prior to beginning construction, submit samples of mild steel items. Samples will be returned for use in work.

2. MATERIALS

A. Mild steel: Low carbon, general purpose, merchant quality, suitable for forming and welding, complying with AISI B-1020 for hot rolled bars. Sandblast, treated with phosphoric acid and proper catalyst not exceeding 100 mg per square foot, providing a rust resistant base for paints, SSPC SP6

B. Paint, Rust-Oleum X-99 Red Primer and Rust-Oleum No. 412, Flat Black, by Rust-Oleum Corporation, P. O. Box 32, Evanston, Illinois 60204, or approved equal.

3. EXECUTION

A. All work, carefully fireforged, inclosed, or hammer welded to produce desired design and effect, substantially framed together. Free ornaments, solid mild steel, worked, inclosed, or hammer welded as shown. Gas or electric welding will not be permitted.

B. Painting: Clean all exposed surfaces of rust, dirt, oil, and grease. Apply 1 coat of primer, and 2 finish coats of flat paint. Follow container directions and apply paint evenly without runs, sags, holidays, or other defective brushing.

CARPENTRY AND MILLWORK

1. GENERAL

A. Standards: American Institute of Timber Construction (AITC), Architectural Woodwork Institute (AWI), Federal Housing Administration (FHA), and manufacturers' printed recommendations.

B. Product Handling: Store lumber and millwork, where directed, off the ground, with protective covers. Do not expose wood to extreme changes of temperature and humidity.

2. MATERIALS

A. Wood: S4S, free from warpage, stain, rot, or other imperfections affecting strength, durability, and appearance. Moisture content not to exceed 19 percent for yard lumber and 12 percent for finish lumber. Lumber 2 inches thick and less, kiln dried. For exposed work, hand selected.

1. Trusses; all truss members requiring replacement are to be select structural fir or better Douglass fir.

2. Framing lumber; at roof rafters, cupola framing to be No 2 grade, Douglas fir or No. 1 grade, Southern yellow pine. Blocking and furring may be No. 3 or No. 4 Southern yellow pine.

3. Sheathing: 1 inch No 2 or No. 3 Southern yellow pine.

4 Exterior finish: All exposed wood components, C Select or Quality white pine or yellow-poplar clear of defects.

5. Exterior millwork: Door and window frames, sashes, and other millwork, B and better or choice white pine or yellow-poplar clear of defects.

B. Treatment:

1. Lumber specified for exterior use to be Wolmanized Brand shall be pressure-impregnated in accordance with the specifications for treatment, of Koppers Company, Inc., with Wolman CCA wood preservative and shall bear the trademark WOLMANIZED.

2. Wolmanized pressure-treated lumber shall conform to AWPB Standard LP-2 or LP22 and bear a mark certifying conformance.

3. Wolmanized pressure-treated lumber which is to be painted or varnished shall be kiln-dried or air-seasoned to an average moisture content of 18% or less before painting. Brush all field cuts with preservative.

C. Building Paper: 30 pound asphalt saturated felt.

D. Rough Hardware: Nails, spikes, screws, bolts, nuts, washers, anchors, and similar items of proper size to rigidly secure members in place. All exterior fastenings, galvanized of aluminum.

3. EXECUTION:

A: Layout: Establish elevations; furnish, set, and lay out wood framing and millwork.

B. Framing: Sizes and spacings as shown.

1. Installation: Cut framing square on bearings, closely fit; accurately set to required lines and levels; secure rigidly in place at bearings and connections. Do not cut, notch, or bore framing members for passage of pipes or conduits without approval Reinforce framing members where damaged by cutting.

2. Shims: Do not use shims for leveling on wood or metal bearings. Use slate or tile shims with full bearing for leveling on masonry.

3. Rafters: Set with crown edge up.

4. Wall and Roof Sheathing: Nail each board twice at each bearing with 8d common nails driven at a slight angle. Make end joints over bearing and stagger joints with no end joint occurring in same space in adjacent boards. Butt boards snugly together and drive nails well below surface of board. When boards are used for wall sheathing, apply them diagonally or use diagonal bracing with horizontally applied sheathing.

C. Finish Carpentry:

1. Trim: Install door, window, and other trim around openings in single lengths after corners. Install running trim or millwork in long lengths, with end joints staggered over bearings, and at 45 degrees.

2. Nailing: Blind nail where possible. Glue and nail built-up items. On exposed surfaces, set finishing nails to receive putty.

3. Millwork: Cope molded work at returns and interior angles. Miter at corners Shoulder miter fascia boards. Scribe, miter, and join accurately to detail. Kerf backs of wide flat members. Groove back of flat trim members. Machine sand with grain in shop and finish by hand sanding. Exposed millwork, free from defects. Slightly round corners of square or rectangular sections. Insure work will remain in place without warping, splitting, or opening of joints.

4. Exterior Millwork: Immediately prime millwork after installation. Use nonferrous or galvanized fastenings. If millwork is cut in field for fitting, coat cut ends with preservative. Treat millwork after fabrication.

5. Frames: No butt joints permitted.

6. Siding: Use concealed nailing where possible. Horizontal siding, long lengths with end joints made at 45 degrees only at bearing. Vertical siding, single lengths. Install no siding until face, sides, tongues and grooves have been primed. Concealed nailing, set nails for putty.

7. Finish Hardware and Weatherstripping: Fit accurately, apply securely, and adjust carefully all items of finish hardware specified. Exercise care to avoid marring or injuring adjacent work or hardware. Install weatherstripping if shown. Set wood thresholds in base sealant compound. Use proper boring jigs, strike gages, routers, and templates. Install all locksets using a system of jigs and case equipment capable of accurately cutting openings. Defaced screw heads, marred, or imperfect hardware will not be acceptable. Properly tag all keys received for locks and deliver to the Contracting Officer upon completion of work. Install all items uniformly with like items in same position and location.

SLATE SHINGLE ROOF

1. GENERAL

A Standards as established by American Society for Testing and Materials (ASTM) and manufacturers' printed recommendations, as amended, latest editions, govern the work of this section.

B. Shingles: Meet requirements of grading rules and application recommendations of National Roofing Contractors Association.

2. MATERIALS

A. Slate:

1. Slate shall be Genuine Unfading Buckingham-Virginia Slate as furnished by the Buckingham-Virginia Slate Corporation, 4110 Fitzhugh Ave , Richmond, Va 23230, of the following size and thickness 16-inch long by 8-inch wide by 1/4-inch Buckingham-Virginia Grade A Unfading Blue Black Slate Roofing.

2. All slate shall be hard, dense, sound rock, punched for two nails each. No cracked slate shall be used. All exposed corners shall be practically full No broken corners on covered ends which sacrifice nailing strength or the laying of a watertight roof will be allowed.

1675

GLASS

JOB CONDITIONS

Field Measurements: Determine exact size of glass by field measurements of items to be glazed. Responsibility of glass size rests with the Contractor. Sizes, if indicated, are approximate, and shall be used for estimate only.

MATERIALS

Glass: Shall be historic as supplied the park and to match existing glass in place.

Glazing Compound: Pecora M-242, as manufactured by Pecora Chemical Corporation or approved equal.

Glazing Points: Standard galvanized points.

3. EXECUTION

3-1 GENERAL::Before glazing, check openings to assure they are square, plumb, and in one plane. Maintain uniform face and edge clearances.

3-2 PREPARATION: Thoroughly clean all surfaces prior to glazing operations.

3-3 INSTALLATION: Perform all glazing at the site. Wood shall be primed before glazing. Back putty all glass before setting. Set glass firmly with galvanized glazing points. Cut excess putty to slight line of the muntin leaving a continuous smooth sloping surface returning neatly at corners. Follow recommendations of Flat Glass Marketing Association.

3-4 CLEANING AND ACCEPTANCE: After glazing, remove all foreign material left on the surfaces of glass and wood. Upon completion of construction operations, remove all scratched, chipped, or otherwise defective glass and replace using proper materials and workmanship.

PAINTING AND OTHER FINISHING

1. GENERAL

A. Submit complete list of materials proposed to be provided for the work.

B. Prepare at the job site 12-inch by 12-inch samples of paint colors proposed for use. Samples shall have paint applied on same surface material as will be used in the work.

C. Deliver sealed containers with labels legible and intact.

D. Store where directed and protect materials from damage.

E. Cover and protect finished work of other trades and surfaces not to be painted. Provide drop cloths of adequate size to protect adjacent areas.

F. Determine surfaces to which painting and other finishing are to be applied are even, smooth, sound, clean, dry, and free from defects affecting proper application. Correct or report defective surfaces to Contracting Officer.

G. Do not apply finish material when temperature is below 50 degrees F. Do not apply exterior oil based materials in damp, rainy weather. Do not apply paint on surfaces in direct sunlight. Do not apply finishes in spaces where dust is being generated which would spoil the finish.

H. Take necessary precautions to keep fire hazard to a minimum; remove from the area daily all oily waste, and other combustibles not in covered metal containers.

MATERIALS

A. Paint and Finish Products: Highest quality standard brand, as distributed by a nationally known manufacturer. Paint products shall be fresh and well ground; shall not settle readily, cake, or thicken in the container; shall be broken up readily with a paddle to a smooth consistency; and shall have easy application properties. Other painting materials such as linseed oil, turpentine, mineral spirits, miscellaneous thinners, varnish, and shellac shall be the highest quality of an approved manufacturer.

B. Filling Compounds: Use only high quality, nonshrink materials which have been approved. Use putty for wood, joint compound for wallboard, latex and portland cement for concrete block, and patching plaster or spackling compound for plaster.

C Colors: Match color samples submitted and approved.

D. Materials List:

1. Exterior Wood: Alkyd, Semi-gloss finish. 1st coat: Alkyd Primer. 2nd coat: Alkyd Semi-gloss House Paint. 3rd coat: Alkyd Semi-gloss House Paint.

2. Exterior ferrous metal: Alkyd, semi-gloss finish. 1st coat: Alkyd Lead Silica Chromate Metal Primer. 2nd coat: Alkyd Protective Semi-gloss Enamel. 3rd coat: Alkyd Protective semi-gloss Enamel.

3 Exterior galvanized metal: Alkyd, semi-gloss finish. 1st coat: Alkyd Zinc Dust Metal Primer 2nd coat: Alkyd Protective Semi-gloss Enamel. 3rd coat: Alkyd Protective Semi-gloss Enamel.

3. EXECUTION

A. General Requirements:

1. Lightly sand woodwork to receive a clear finish prior to applying finish.

2. Remove and protect hardware, accessories, device plates, lighting fixtures, factory finished work, and similar items or provide ample in-place protection. Upon completion of each space, carefully replace all removed items. Use only skilled mechanics for removal, replacement, and protection.

3. Remove doors to finish tops and bottoms.

B. Surface Preparation:

1. Wood: Sandpaper to a smooth and even surface, then dust off. After priming coat has dried, apply shellac to surfaces to be painted, including all knots, pitch, and resinous exposed after scraping and burning. After priming coat has dried, putty all nail holes, cracks, open joints, and other defects with lead putty. Putty shall be colored to match stain or paint.

2. Ferrous Surfaces: Remove dirt and grease with mineral spirits. Remove rust, mill scale, and defective paint down to sound surface, using scraper, sandpaper, or wire brush, as necessary. Touch up all spots and damaged shop coats with rust inhibitive primer.

C. Application: Secure approval of each coat prior to proceeding with the next.

1. Apply material evenly without runs, sags, or other defects. Work each coat into the material being coated at an average rate of coverage recommended. Cover surfaces completely to provide uniform color and appearance. Leave moldings, trim, ornaments, edges, and millwork clean and true to details without excess paint in corners or depressions. Make edges of paint adjoining other materials or colors sharp and clean, and without overlaps.

2. Painted and Stained Work: Back prime exterior millwork and finish material if untreated. Prior to or on same day of installation, prime wood siding, faces, edges, tongues, and grooves, and exterior work. Touch up scarred and abraded places on shop or factory applied prime coats.

3. Drying Time: Minimum as recommended. Do not apply succeeding coats until the undercoat is thoroughly dry.

4. Sanding: Lightly sand between coats to insure that surface finish is smooth to the touch. Exterior stained siding, soffits, fascias, and rough-sawn material need not be sanded.

D. Cleanup: Remove all paint, stain, or other finish material where it has spilled or spattered.

E. Schedule of Paint Colors: Numbers shown are based on the Munsell Classifying Systems for paint color by Munsell Color Company, Inc., Baltimore, Maryland.

1. Exterior Doors and Frames: White 2.5Y-8/2.

2. Window Frames and Sash: White, 2.5Y-8/2.

3. Gutter and Downspouts: Not painted.

4. Cupola: White, 2.5Y-8/2.

5. Interior Trim: 2.5Y-8/2.

6. Interior Brickwalls: Whitewash.

7. Roof Framing and Truss: Not painted.

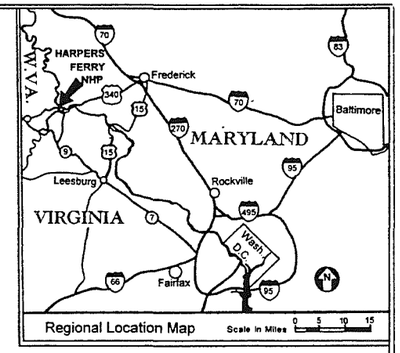
86.2157	P676
PREPARED W.L.BARLOW	DRAWING NO. 385 25,003
DESIGNED W.L. BARLOW	
DRAWN W.L.BARLOW	PKG NO. 1113
CHECKED NOV. 1976	SHEET 13 OF 13
DATE	

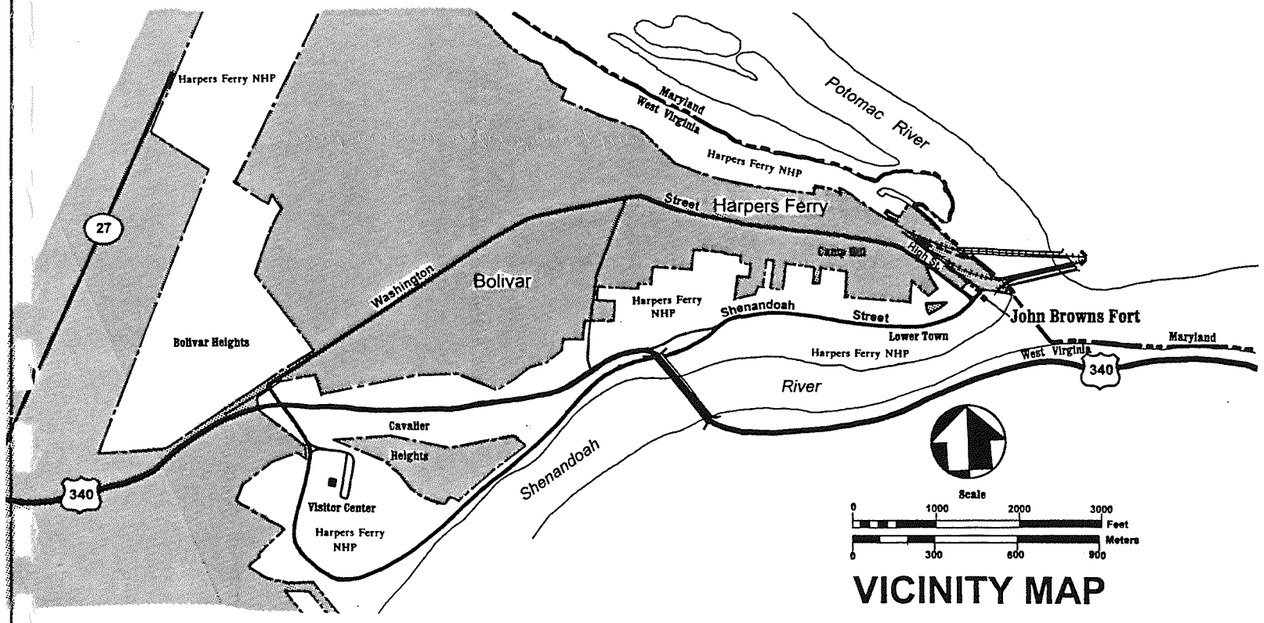
PARTIAL RESTORATION

SPECIFICATIONS — JOHN BROWN'S FORT

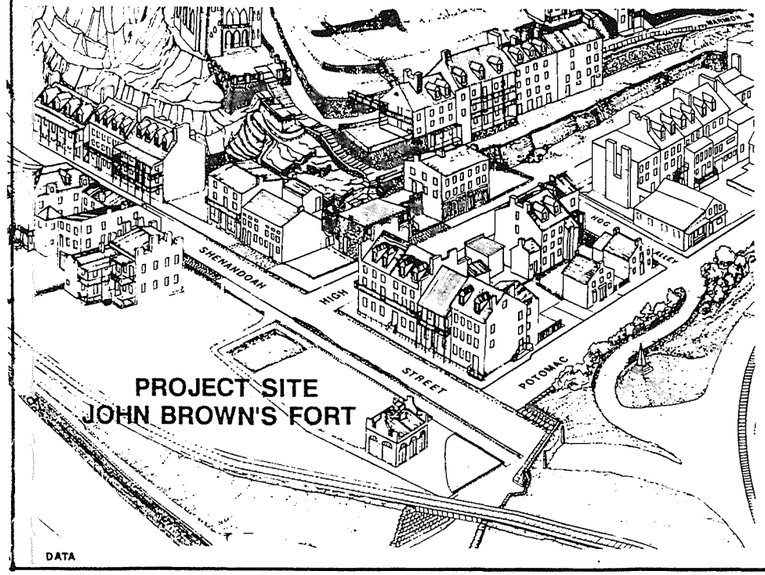
HARPERS FERRY NATIONAL HISTORICAL PARK

JOHN BROWN'S FORT: REPAIRS CONDITION ASSESSMENT- FEBRUARY 1998





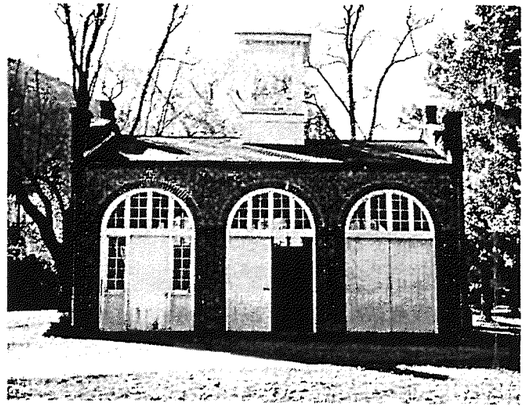
VICINITY MAP



PROJECT SITE
JOHN BROWN'S FORT

DATA

JOHN BROWNS FORT
- December 1997 -



DRAWING INDEX

THESE DRAWINGS HAVE BEEN PREPARED IN ACCORDANCE WITH THE CONDITION ASSESSMENT REPORT

03-12-98
HPTC PROJECT HISTORICAL ARCHITECT

CONDITION ASSESSMENT REPORT AND PRESERVATION REPAIRS DRAWING SET 385/ 80103 (NCR) HPTC & DSC 02/ 98

Pg. 10

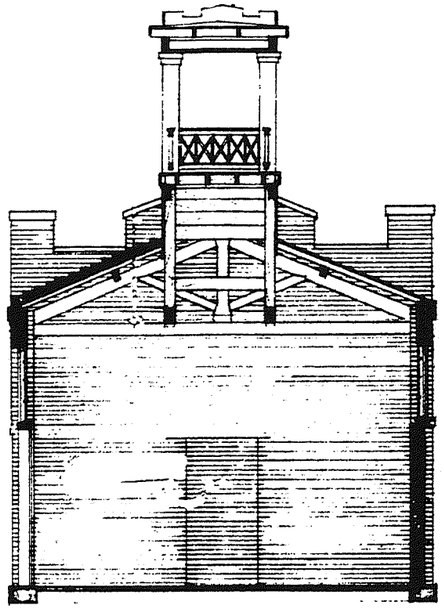
UNITED STATES DEPARTMENT of the INTERIOR
NATIONAL PARK SERVICE
HISTORIC PRESERVATION TRAINING CENTER

PREPARED T. DONALD
DESIGNED
DRAWN L. SUTPHIN
CHECKED
1/98 DATE

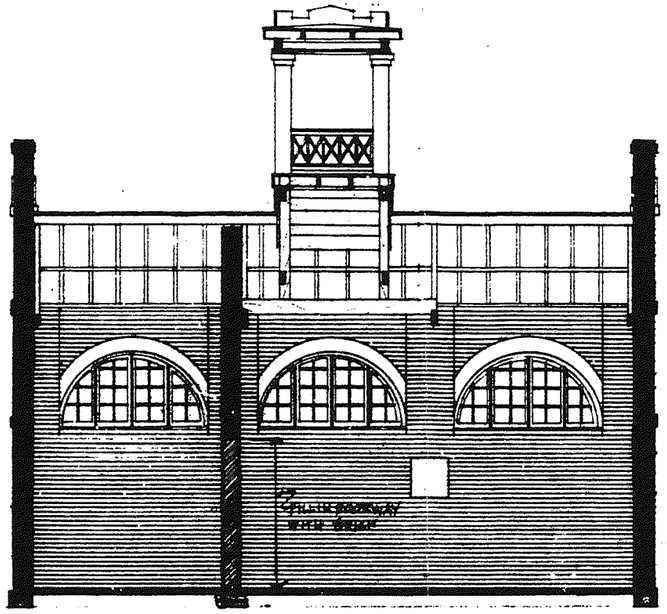
TITLE OF DRAWING
CONDITION ASSESSMENT
LOCATION WITHIN PARK
JOHN BROWNS FORT
NAME OF PARK
HARPERS FERRY N.H.P.
NC REGION | JEFFERSON COUNTY | W.VA. STATE

DRAWING NO. 385 80103
PKG. NO.
SHEET 1 OF 10

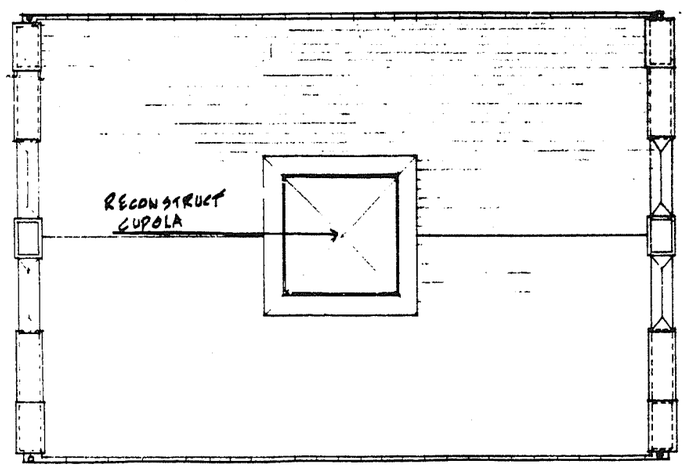
GPO-1974-678-71



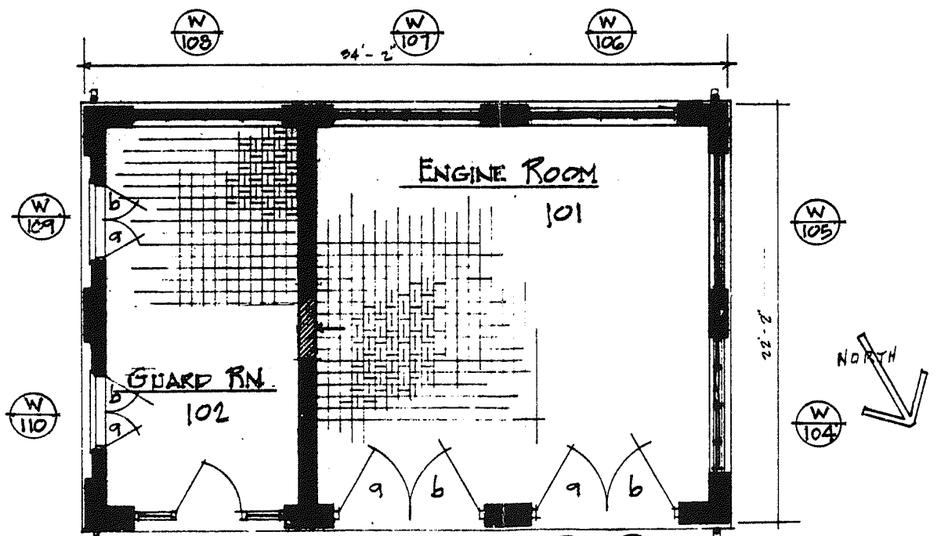
3/2 · SECTION · A—A ·
SCALE: 1/4" = 1'-0"



4/2 · SECTION · B-B ·
SCALE: 1/4" = 1'-0"



2/2 · ROOF · PLAN ·
SCALE: 1/4" = 1'-0"



1/2 · FLOOR · PLAN ·
SCALE: 1/4" = 1'-0"

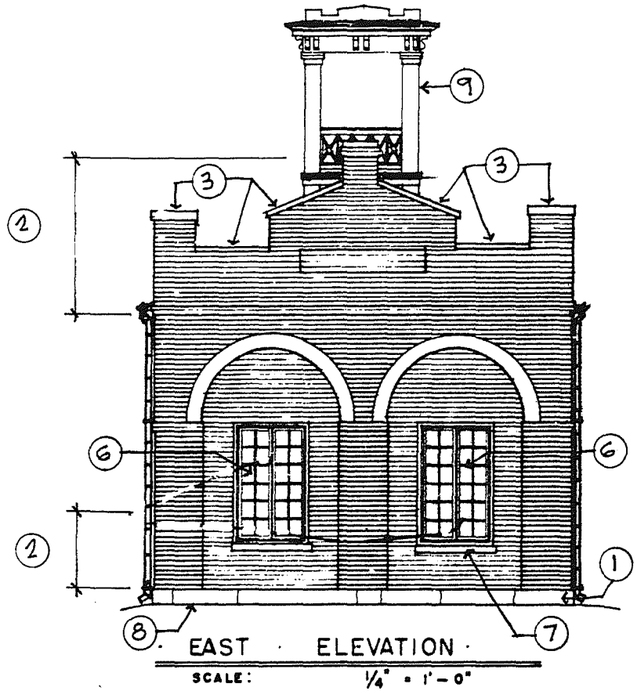
Contractor shall verify all dimensions and take own measurements on the job site before commencing work. Notify Architect of any error or discrepancy.

CONDITION ASSESSMENT REPORT AND PRESERVATION REPAIRS, HPTC, DRWG SET NO. 385/ 80103 02/98, 10 SHEETS

PLANS & SECTIONS - JOHN BROWN'S FORT

SCALE 1/4"=1'-0"

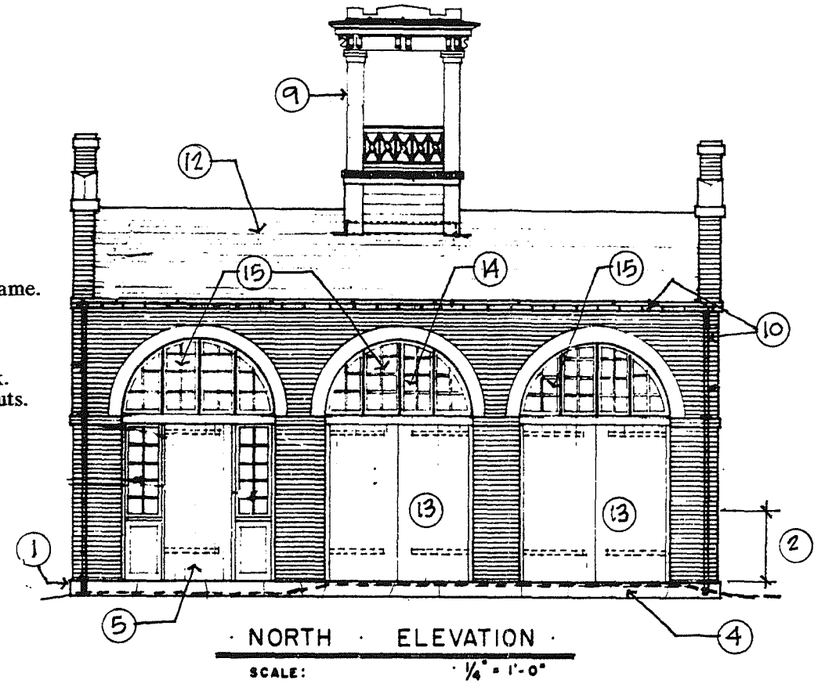
PREPARED	DRAWING NO.
DESIGNED	385 80103
DRAWN	PRJ. NO. / SHEET 2
CHECKED 1/98	OF 10
DATE	



· EAST · ELEVATION ·

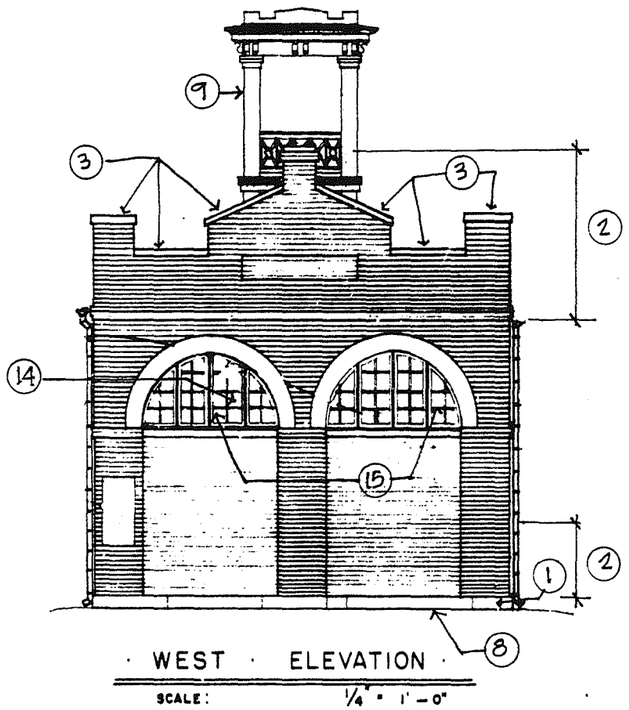
SCALE: 1/4" = 1'-0"

1. Rake and repoint water table.
2. Rake and repoint masonry wall.
3. Reset stone coping.
4. Regrade for ADA access.
5. Remove and repair door, sidelights and frame.
6. Remove and repair sash.
7. Remove and replace sill.
8. Regrade for positive drainage.
9. Remove and replace deteriorated millwork.
10. Remove and replace gutters and downspouts.
11. Add additional gutter brackets.
12. Remove and replace broken slate.
13. Repair door.
14. Remove and replace broken glazing.
15. Repair windows.



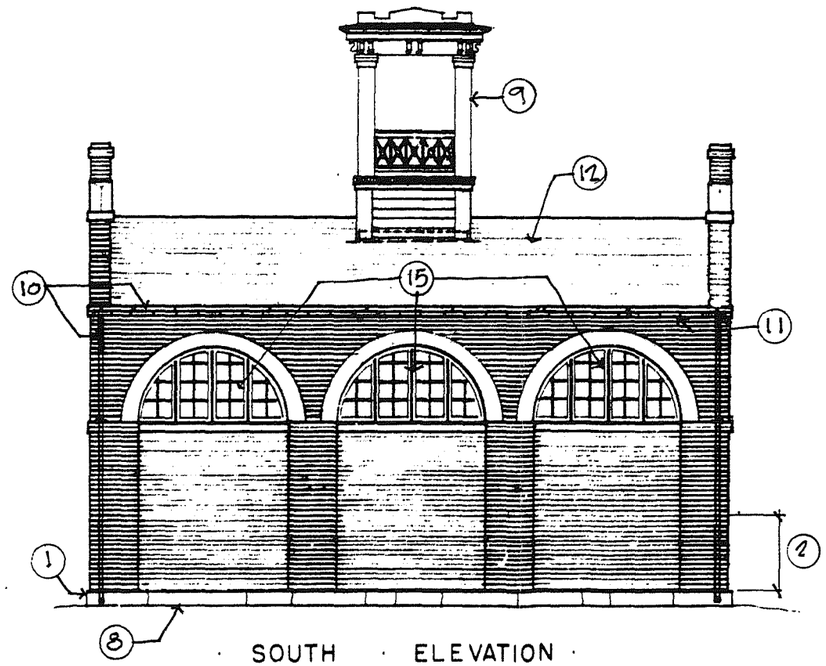
· NORTH · ELEVATION ·

SCALE: 1/4" = 1'-0"



· WEST · ELEVATION ·

SCALE: 1/4" = 1'-0"



· SOUTH · ELEVATION ·

SCALE: 1/4" = 1'-0"

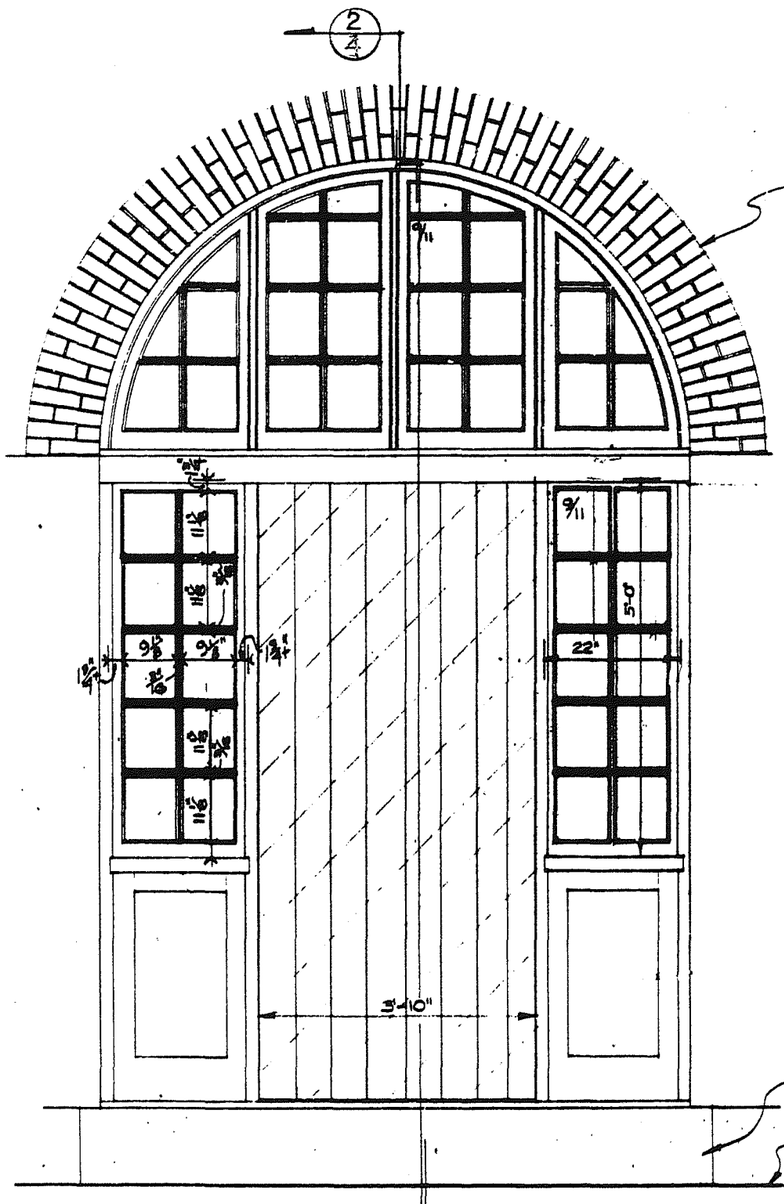
CONDITION ASSESSMENT REPORT AND PRESERVATION REPAIRS, HPTC, DRWG SET NO. 385/80103 02/98, 10 SHEETS

EXTERIOR ELEVATIONS - JOHN BROWN'S FORT

SCALE 0 5 10 FEET 1/4" = 1'-0"

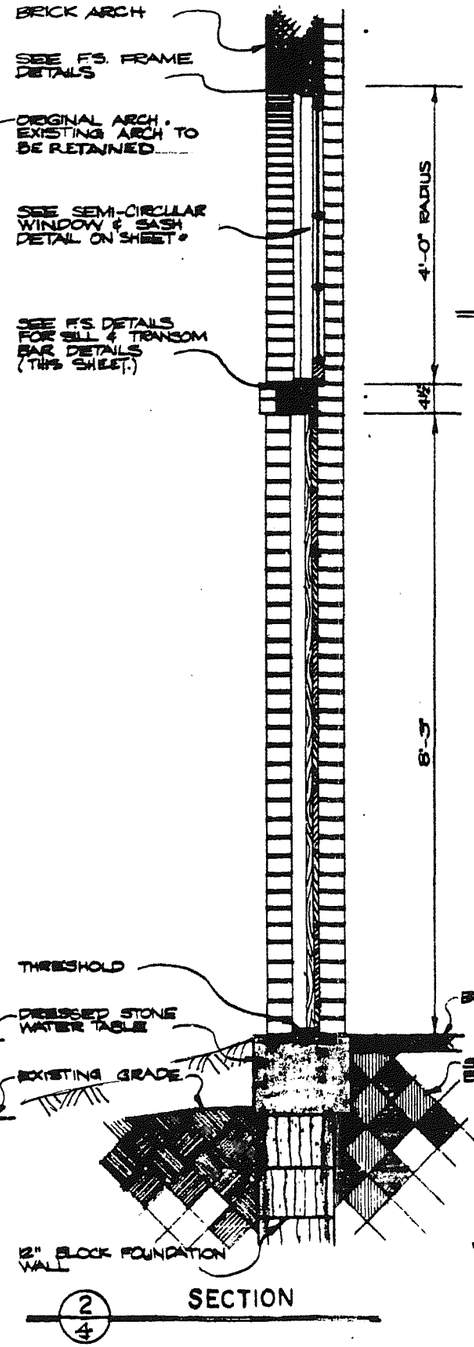
Pg. 78

PREPARED	DRAWING NO.
DESIGNED	385 80103
DRAWN -	PRG. NO. 1111 / SHEET 3
CHECKED 1/98 DATE	OF 10

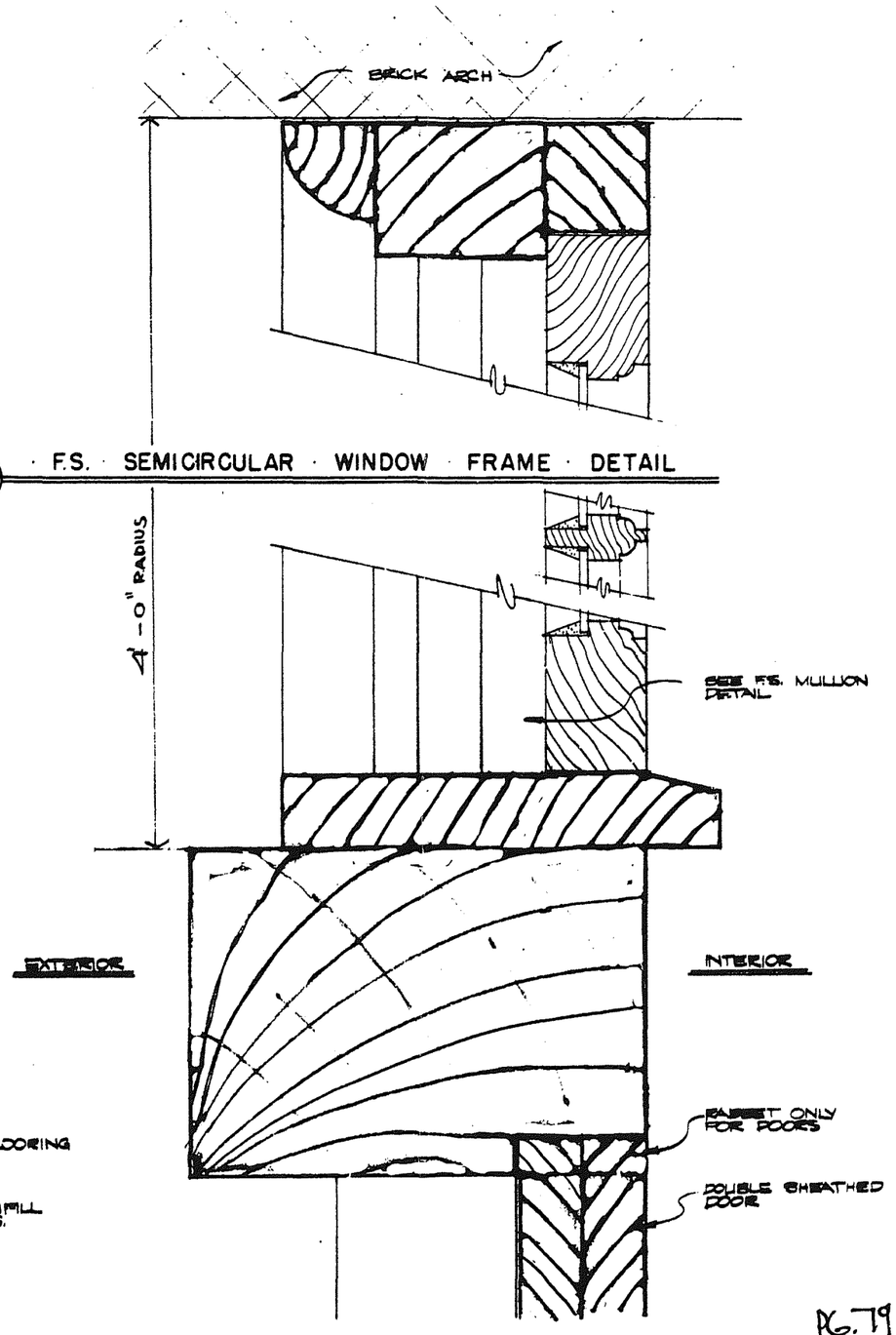


1/4 · GUARD · ROOM · BAY · ENTRANCE · ELEVATION

SCALE: 1" = 1'-0"



2/4 SECTION



3/4 · F.S. · SEMICIRCULAR · WINDOW · FRAME · DETAIL

4/4 F.S. WINDOW · SILL · & · DOOR · TRANSOM · DETAIL

PG. 79

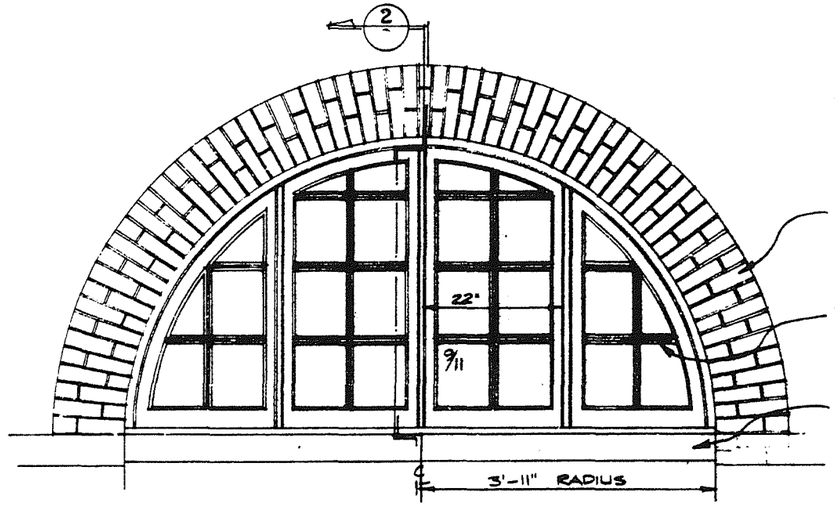
CONDITION ASSESSMENT REPORT AND PRESERVATION REPAIRS, HPTC, DRWG SET NO. 385/ 80103 02/98, 10 SHEETS

BROWN'S FORT

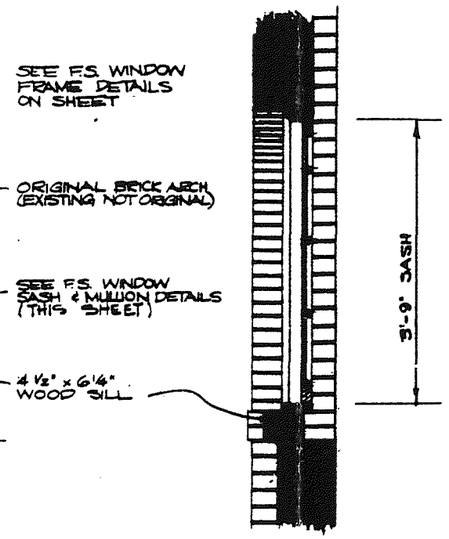
ENTRANCE DETAILS - JOHN B

SCALE 3" 1'-1'-0"

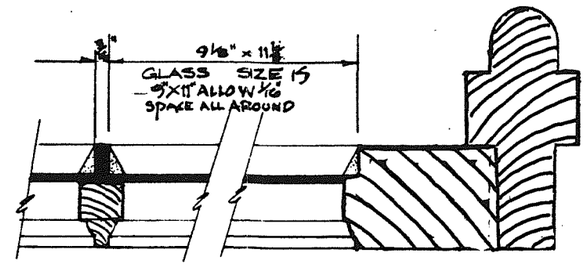
PREPARED	DRAWING NO.
DESIGNED	385 80103
DRAWN	PKG NO. / SHEET 4
CHECKED	OF 10
DATE	



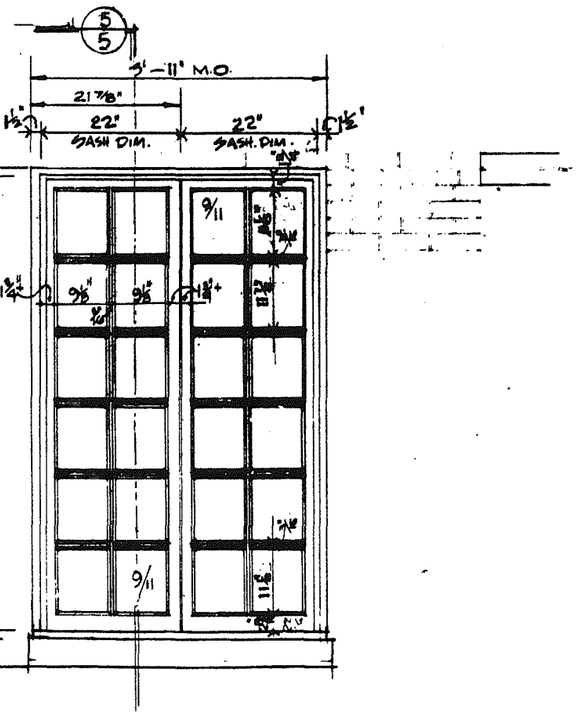
1/5 · SEMI-CIRCULAR · WINDOW ·
SCALE: 1" = 1'-0"



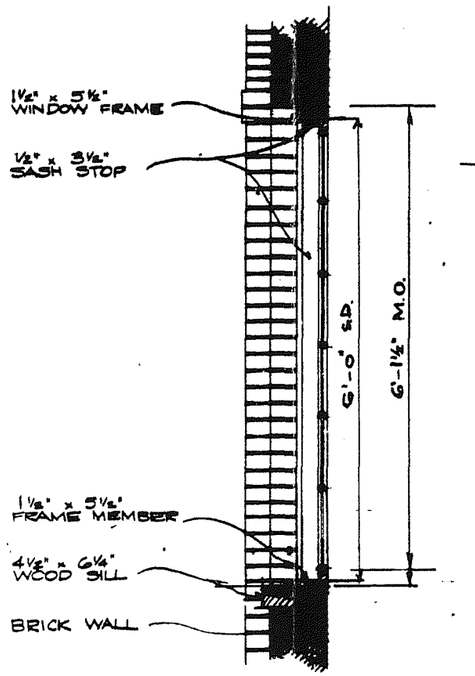
2/5 · WINDOW · SECTION ·
SCALE: 1" = 1'-0"



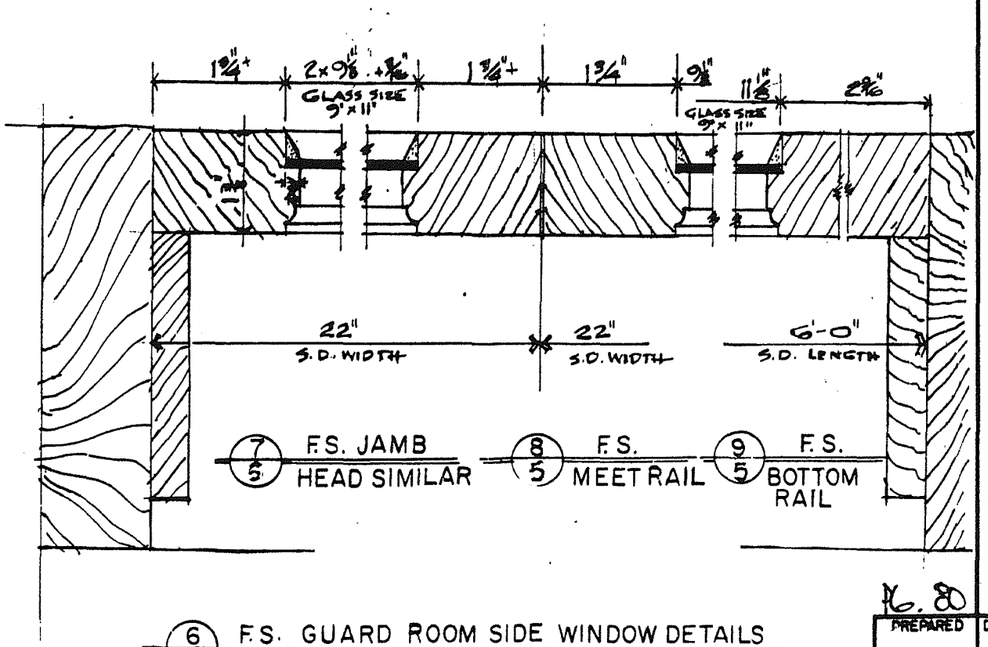
3/5 · F.S. · WINDOW · SASH · & · MULLION · DETAIL ·



4/5 · GUARD · ROOM · SIDE · WINDOW ·
SCALE: 1" = 1'-0"



5/5 · WINDOW · SECTION ·
SCALE: 1" = 1'-0"



6/5 F.S. GUARD ROOM SIDE WINDOW DETAILS

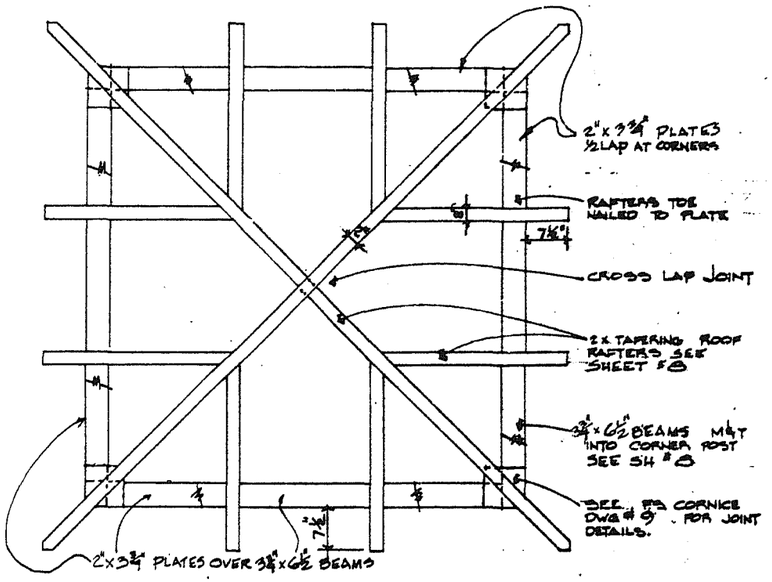
CONDITION ASSESSMENT REPORT AND PRESERVATION REPAIRS, HPTC, DRWG SET NO. 385/ 80103 02/98, 10 SHEETS

WINDOW DETAILS - JOHN BROWN'S FORT

SCALE 5' 0 1'-1'-0"

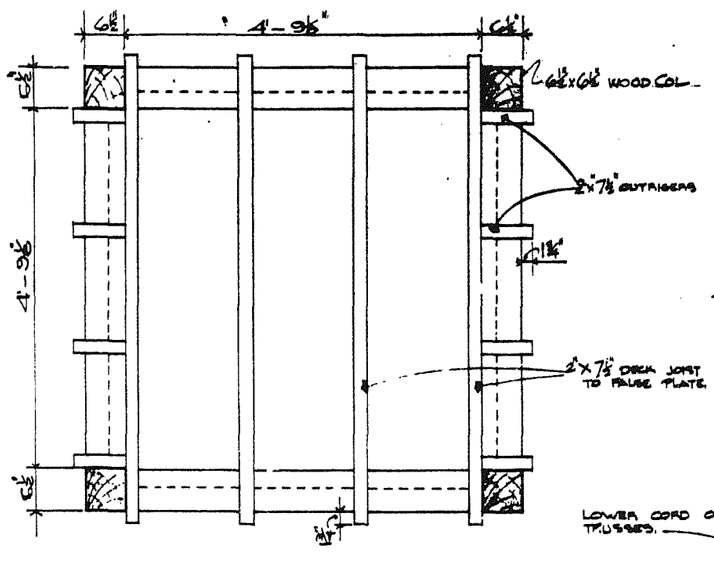
K.80

PREPARED	DRAWING NO.
DESIGNED	385 80103
DRAWN -	PKG NO. 1111
CHECKED 1/98 DATE	SHEET 5 OF 10



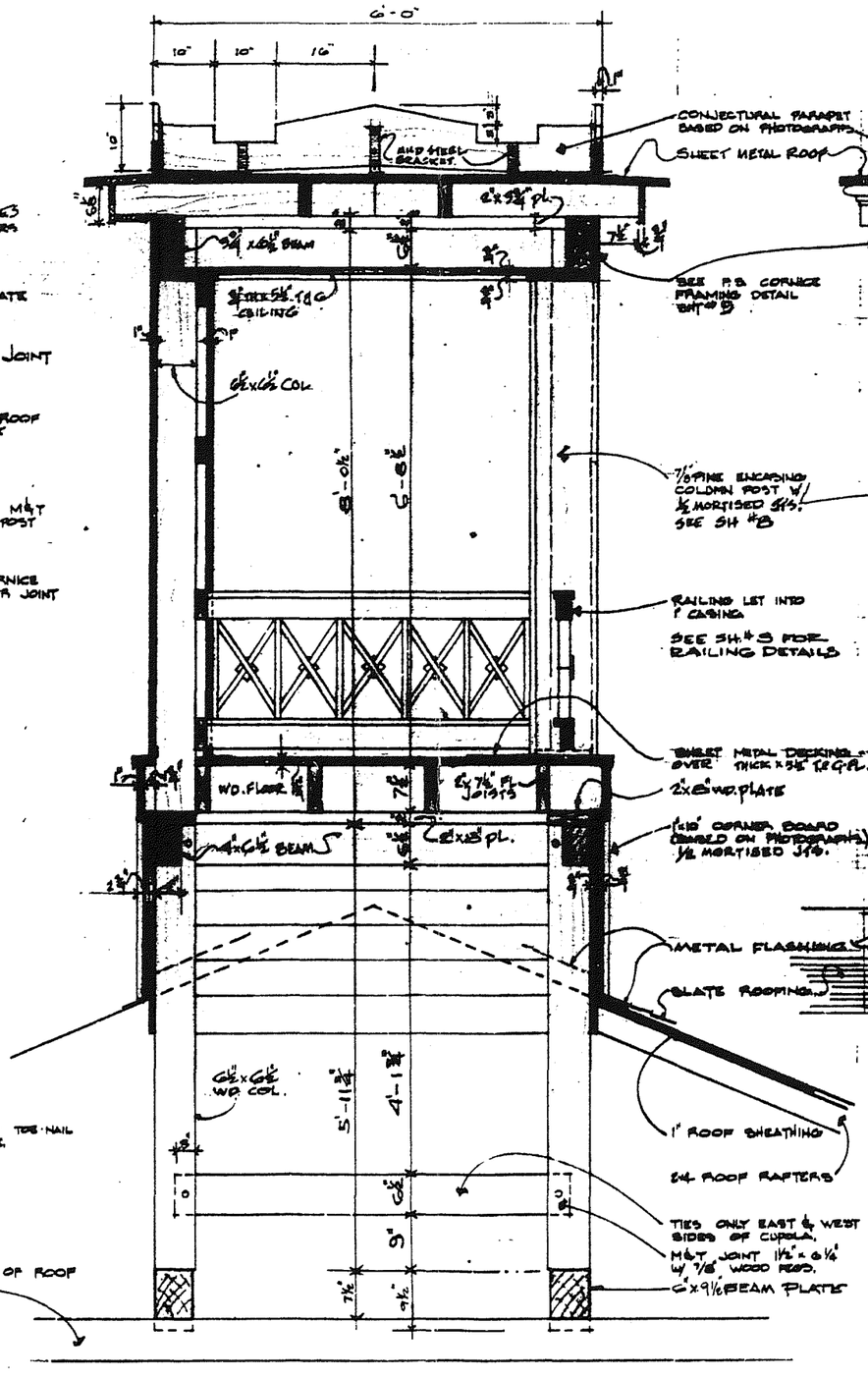
· CUPOLA · ROOF · FRAMING · PLAN ·

SCALE: 1" = 1'-0"



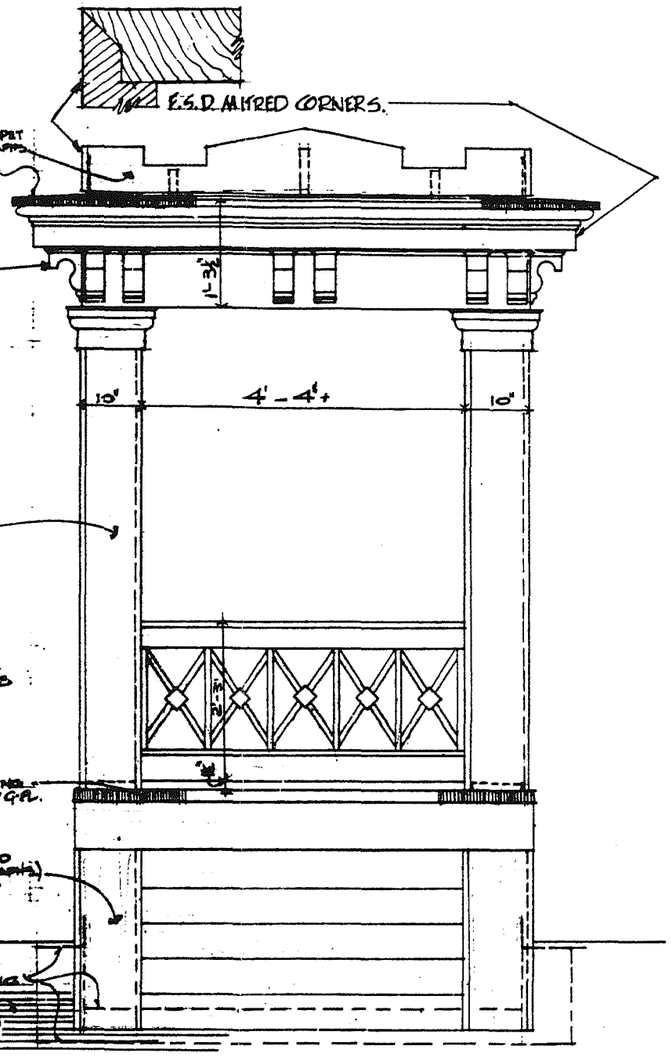
· CUPOLA · DECK · FRAMING · PLAN ·

SCALE: 1" = 1'-0"



· CUPOLA · SECTION · & · FRAMING · DETAILS ·

SCALE: 1" = 1'-0"



· CUPOLA · ELEVATION · (ALL FOUR ELEVATIONS SIMILAR.

SCALE: 1" = 1'-0"

NOTE:
ALL DIMENSIONS GIVEN ARE ACTUAL.

CONDITION ASSESSMENT REPORT
AND PRESERVATION REPAIRS,
HPTC, DRWG SET NO. 385/ 80103
02/98, 10 SHEETS

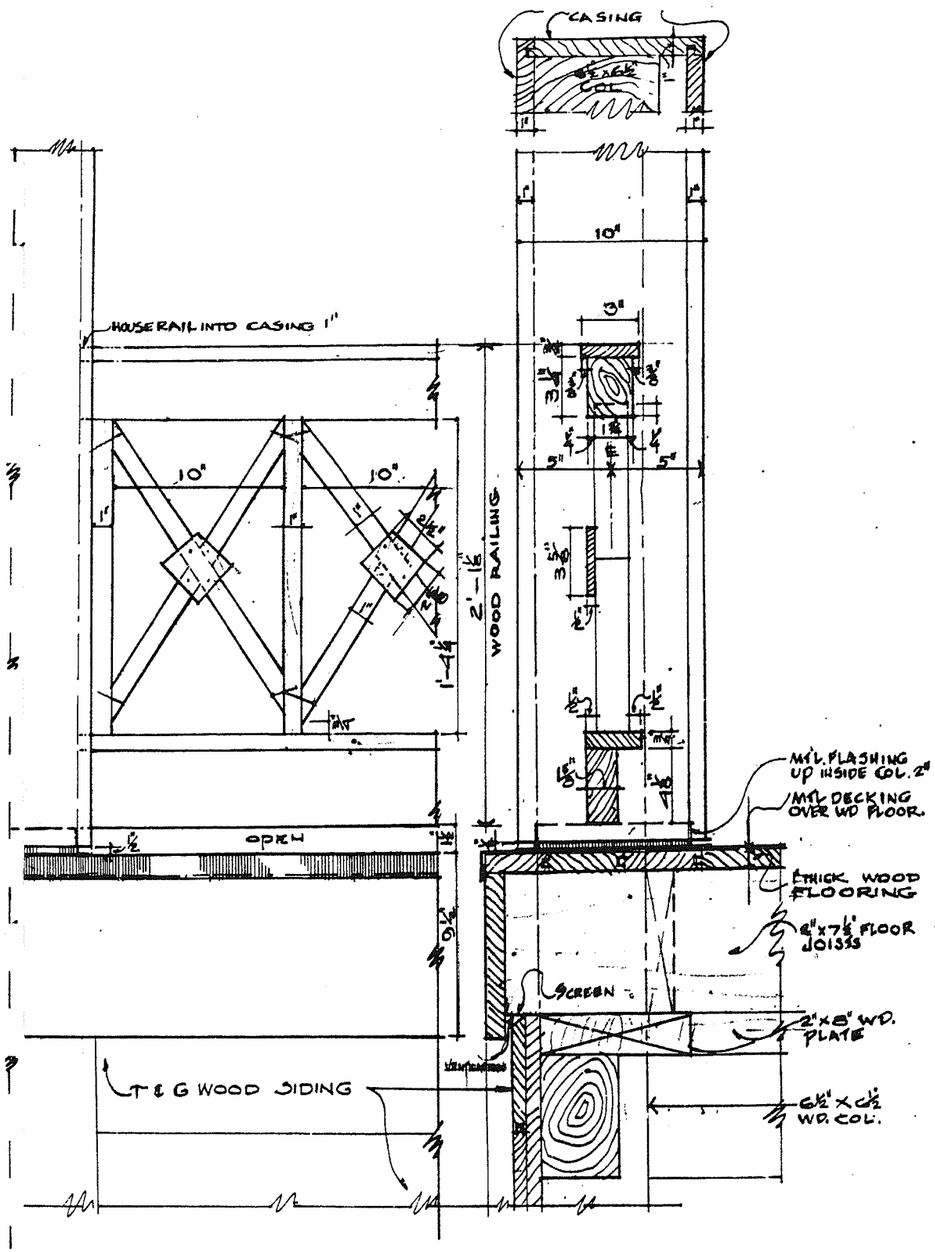
CUPOLA — JOHN BROWN'S FORT

SCALE: 1" = 1'-0"

PG. 81

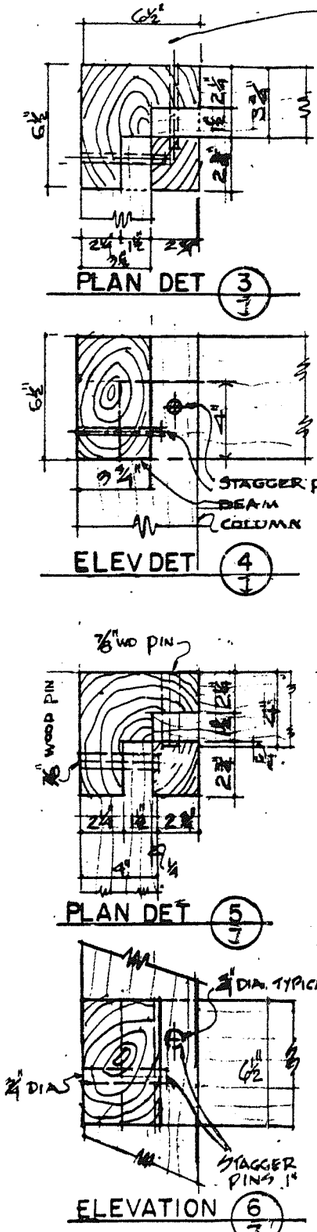
PREPARED	DRAWING NO.
DESIGNED	385 80103
DRAWN	PK& NO. / SHEET 6
CHECKED	OF 10
1/98 DATE	

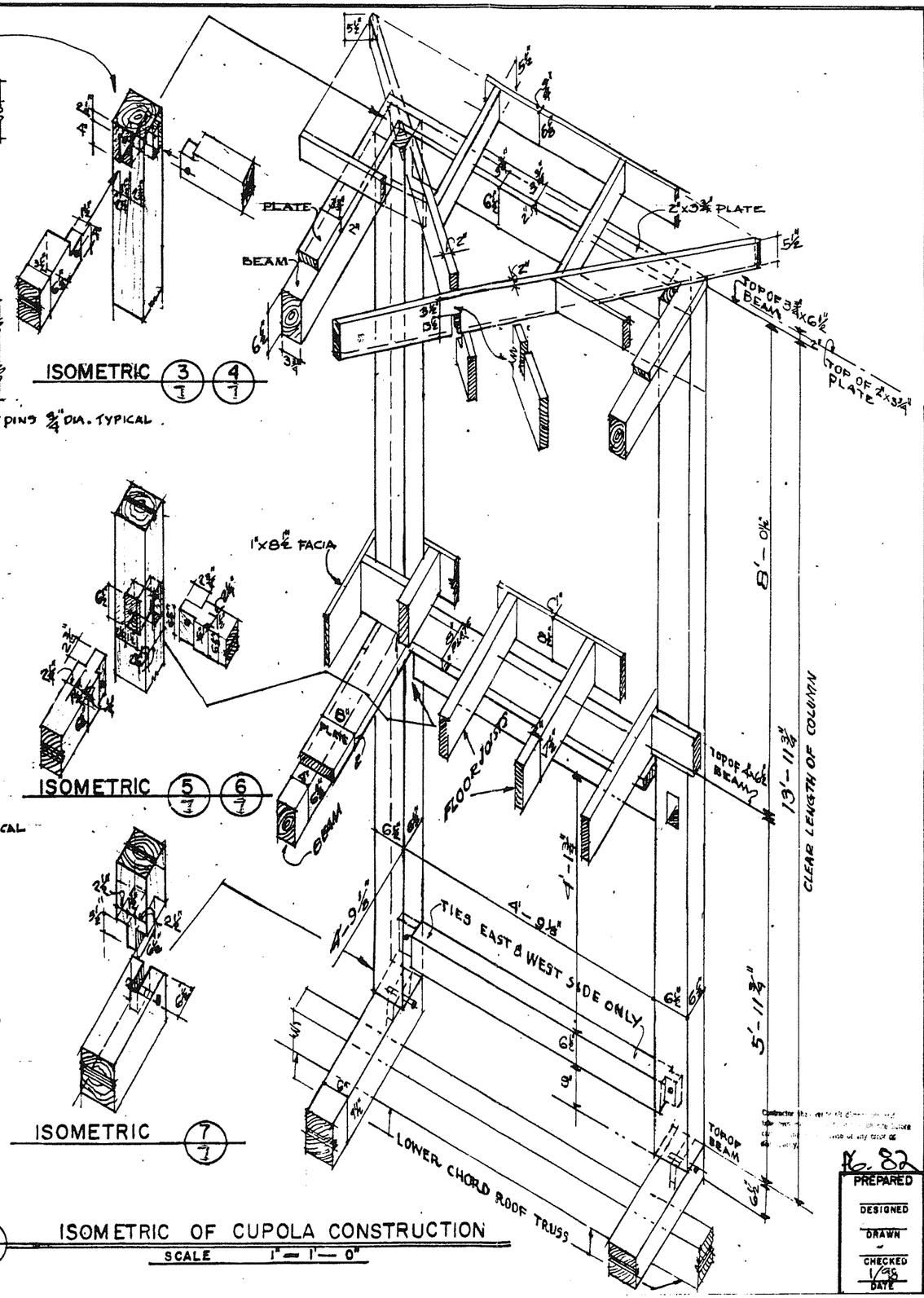
Contractor shall ... take ... dimensions ... Shop ...



ELEV DETAIL 1/7

SECTION DETAIL 2/7





9/7 DRAWINGS OF CUPOLA RAILING DETAILS

SCALE 3" — 1'—0"

8/7 ISOMETRIC OF CUPOLA CONSTRUCTION

SCALE 1" — 1'— 0"

CONDITION ASSESSMENT REPORT
AND PRESERVATION REPAIRS,
HPTC, DRWG SET NO. 385/ 80103
02/98, 10 SHEETS

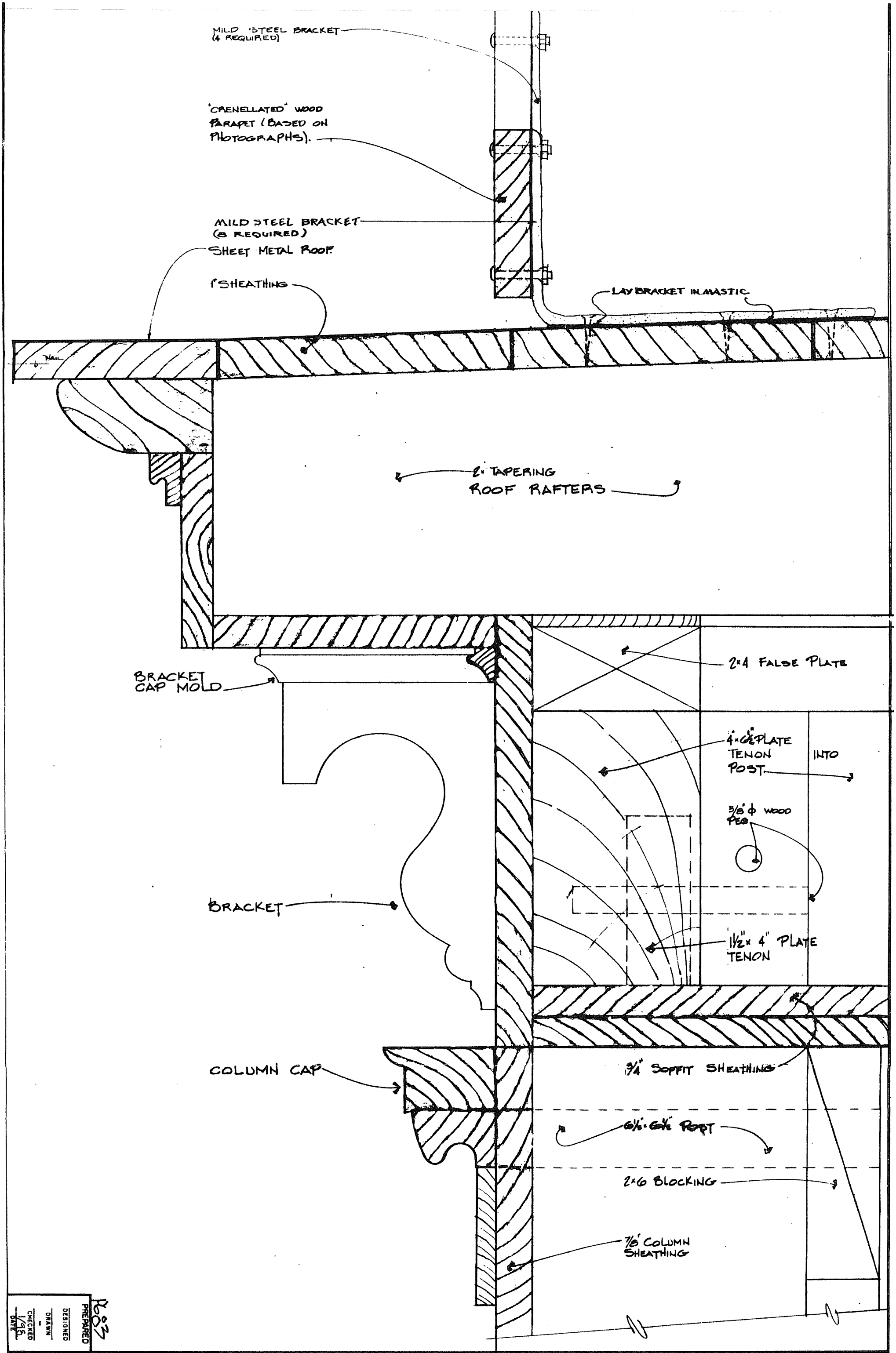
JOHN BROWNS FORT

CUPOLA ISOMETRIC

SCALE 5' 0 1' 1"=1'-0"

No. 82

PREPARED	DRAWING NO
DESIGNED	385 80103
DRAWN	PKG. NO. / SHEET 7
CHECKED 1/98 DATE	OF 10



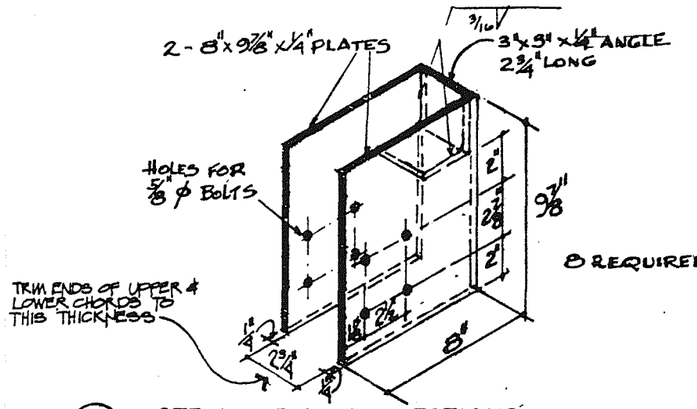
PREPARED RCG
DESIGNED
DRAWN -
CHECKED 1/96
DATE

DRAWING NO. 385 80103
PKG. NO.
SHEET 8 OF 10

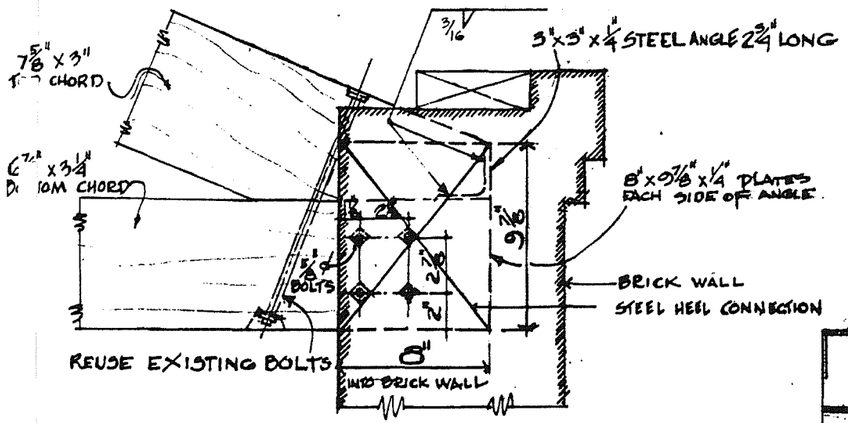
COPULA CORNICE — JOHN BROWN'S FORT

SCALE: 1 2 3 INCHES FULL SIZE

CONDITION ASSESSMENT REPORT
AND PRESERVATION REPAIRS,
HPTC, DRWG SET NO. 385/ 80103
02/98, 10 SHEETS



5/9 STEEL HEEL CONNECTIONS
ISOMETRIC · DRAWING



4/4 DETAIL OF TRUSS HEEL
SCALE = 3" = 1'-0"

REPLACE RAFTERS ROTTED & BROKEN AS REQUIRED.

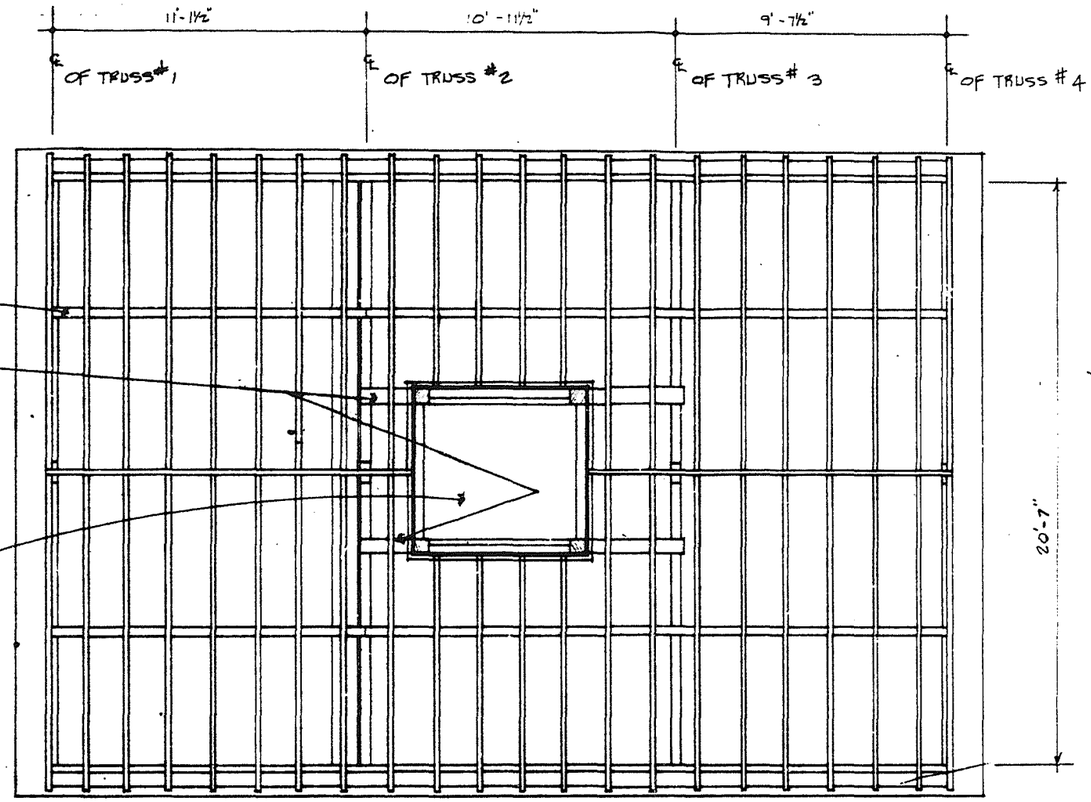
NEW 4x6 PURLIN (OVER GUARD ROOM ONLY)

NEW 6"x8" BEAMS SET ON BOTTOM CHORDS OF TRUSSES #2 & #3

REPLACE ROOF SHEATHING AS REQUIRED.

REMOVE REMAINING CUPOLA BASE & STEPS AND RECONSTRUCT CUPOLA FRAMING TO DETAILS SEE SHT.# 10 & 11.

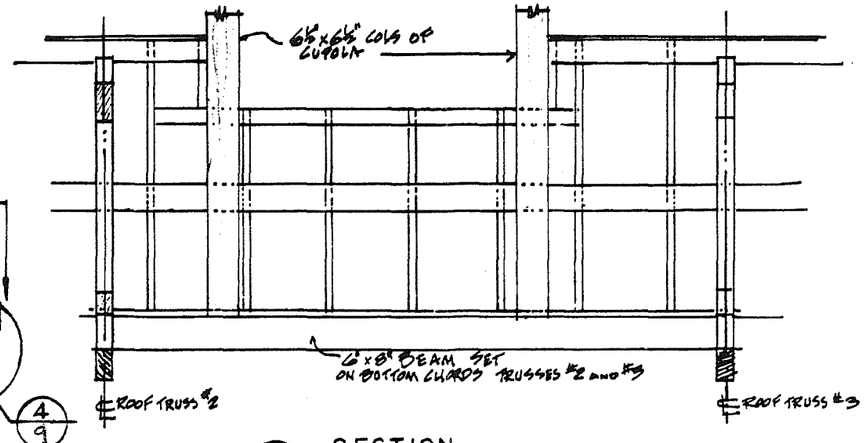
REPLACE ALL LOWER TRUSS CORDS.



2/9 · ROOF · TRUSS ·
SCALE: ¾" = 1'-0"

3/9 SEE SH.# 8 FOR CUPOLA FRAMING
PART CUPOLA FRAMING SHOWN ON ⅛ OF TRUSS
REPLACE KING POST ON TRUSS #2
NEW SLATE ROOF
NEW COPPER GUTTERS AND DOWNSPOUTS
WOOD PINS ⅝" ϕ
6"x8" BEAM SET ON BOTTOM CHORD OF TRUSS
REPLACE ALL BOTTOM TRUSS CORDS
CHECK ALL TRUSSES FOR ROT WITH WALL POCKETS
4/9

1/9 · ROOF · FRAMING · PLAN ·
SCALE: ⅜" = 1'-0"



3/9 · SECTION ·
SCALE: 3/4" = 1'-0"

NOTE: ALL DEMENSIONS GIVEN ARE ACTUAL.

NOTE: DISMANTLE THE EXISTING TRUSSES WITH CARE. EXAMINE TRUSS JOINTS. OBSERVE METHODS OF DOWELING AND FASTENING. THE ARCHITECT SHALL BE PRESENT AT THIS TIME, AND WILL DETERMINE IF ANY REVISIONS TO DRAWINGS SHOWN ABOVE, TO TRUSS CONNECTIONS, AND FASTENING DETAILS, BE NECESSARY.

CONDITION ASSESSMENT REPORT
AND PRESERVATION REPAIRS,
HPTC; DRWG SET NO. 385/ 80103
02/98, 10 SHEETS

BROWN'S FORT

ROOF FRAMING — JOHN BR

PG84

PREPARED	DRAWING NO.
DESIGNED	385 80103
DRAWN -	PKG. NO. / SHEET 9
CHECKED i/98	OF 10
DATE	

SLATE ROOF

BRICK

F.S.D. PLAN OF GUTTER PIN
18 REQUIRED

2/10 PLAN GUTTER PIN

NUT AND BOLT

GUTTER SHOWN IN PLACE FULL SIZE MADE IN 14" LENGTHS LAPPED

1" COPPER STRAP

3/10 COPPER GUTTER AND GUTTER STRAP

SCREEN

4/10 GUTTER PIN

NEOPRENE WASHERS

RIVET 1" COPPER STRAP TO GUTTER PIN

14" 14"

SOLDER

8/10 GUTTER LAP

GUTTER PIN MADE OF MILD STEEL PRIME PRIOR TO INSTALLATION

NAIL INTO VERTICAL BRICK JOINT

SOLDER DOWN SPOUT TO GUTTER

3" COPPER DOWN SPOUT

SOLDER ALL JOINTS

5/10 MITRED BENDS COPPER D.S.

GUTTER PIN

3" ø COPPER D.S.

BRICK OFILE

D.S. PIN WD. BLOCK

COPPER D.S. MADE IN 14" LENGTHS WITH 1" LAP. SOLDER

DOWN SPOUT PIN MADE OF MILD STEEL

NAIL INTO HORRIZ. BRICK JOINT

6/10 D.S. PIN ELEVATION

WOOD BLOCK

D.S. PIN WD BLOCK

COPPER D.S. 1/10
SCALE 3/4" = 1'-0"

BRICK WALL

F.S.D. PLAN DOWN SPOUT PIN
8 REQUIRED

NAIL WD. BLOCK INTO HORRIS. BRICK JOINT

3" COPPER DOWN SPOUT MADE IN 14" CLEAR LENGTHS. LAPPED 1"

NEOPRENE WASHER/ SPACER BETWEEN DOWNSPOUT AND MILD STEEL BRACKET

8½" LONG

SOLDER ALL JOINTS

BRICK WALL

7/10 PLAN DOWN SPOUT PIN

CONDITION ASSESSMENT REPORT AND PRESERVATION REPAIRS, HPTC, DRWG SET NO. 385/ 80103 02/98, 10 SHEETS

GUTTERS & DOWN SPOUTS-JOHN BROWNS FORT

FULL SIZE

3 INCHES 2 1 0

SCALE

P685

PREPARED	DRAWING NO.
DESIGNED	385 80103
DRAWN -	PKG NO. / SHEET 10
CHECKED 1/98 DATE	OF 10

XI. APPENDIX C / PROJECT AGREEMENT

United States Department of the Interior

TAV

NATIONAL PARK SERVICE
Historic Preservation Training Center
4801 A Urbana Pike
Frederick, MD 21704

D18 (HPTC)

May 21, 1997

Memorandum

To: Superintendent, Harpers Ferry National Historical Park

From: Superintendent, Historic Preservation Training Center

Ref.: Flood/ Storm Recovery Project; Design Assistance @ PKG 110 and John Brown Fort Repairs

Subject: Transmittal of **FINAL** Project Agreement

Enclosed is the FINAL Project Agreement for the referenced project. Comments received from the Peter Dessauer and Tim Fox have been incorporated into this document. *Changes are in italics to differentiate them from the original text.*

We have included Option 1, a full scale mock-up of the approved replacement hardware as per Mr. Dessauer's suggestion. This increases the Project Total by $1600 from $12500 to $14100. See Section IX. Project Cost Estimate/ Budget for further details.

Please review this final Project Agreement and upon your approval sign and return the original cover sheet only to this office; this indicates final park approval of the Project Agreement. HPTC will distribute copies of the approved cover sheet to all project team members. Based on your approval please initiate a transfer of funds ($14100) to the Historic Preservation Training Center.

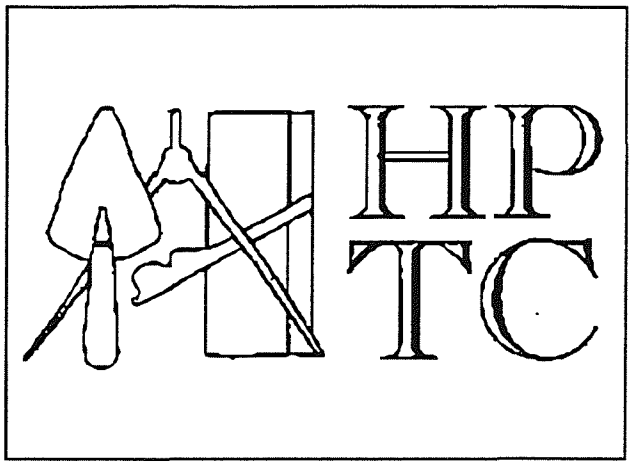
If we can provide further information or assistance regarding this project please do not hesitate to contact Tom Vitanza, Project Historical Architect at (301) 663-8206, extension 135.

Thank you for your attention to this matter.

H. Thomas McGrath, Jr.

Enclosure: Final Project Agreement

cc: (all w/c encl.)
HAFE, Tim Fox, Chief of Maintenance
HAFE, Bob Wilhide, Maintenance Foreman
HAFE, Peter Dessauer, Park Architect
NCR, Rebecca Stevens, Regional Historical Architect (FYI)



FINAL PROJECT AGREEMENT

HARPERS FERRY NATIONAL HISTORICAL PARK

Harpers Ferry, West Virginia

National Capitol Region, National Park Service

FLOOD / STORM RECOVERY PROJECT: DESIGN ASSISTANCE AT PKG 110 BUILDINGS AND JOHN BROWN FORT REPAIRS 1997

Recommended: _____ 5/21/97

Superintendent, Historic Preservation Training Center — Date

Approved: _____ 5/21/97

Superintendent, Harpers Ferry National Historical Park — Date

Prepared by:
Thomas A. Vitanza
Historic Architecture Team Leader
Historic Preservation Training Center
4801 A Urbana Pike
Frederick, Maryland 21704

I. PROJECT DESCRIPTION

The HPTC Historic Architecture Preservation Team has been requested to provide Harpers Ferry National Historical Park with preservation design assistance for two specific projects. Both projects are located in historic lower town which was ravaged recently by two 100 year floods i*n January 1996 and September 1996. As a result, the John Brown Fort, Building 63, is part of the HAFE Flood/ Storm Recovery Program and needed repairs are funded.*

The first task is to provide updated preservation assistance with the exterior doors at the museum complex located in Buildings 9, 10, 11, and 12 and their respective annexes. The focus will be on the main egress doors, secondary exiting doors, and basement level doors.

The second task is to provide general preservation maintenance and flood/ storm recovery repair recommendations, drawings, and specifications for the John Brown Fort. All work to be accomplished by NPS preservation/ maintenance employees.

II. STRUCTURE DESCRIPTION

Task 1. Buildings 9, 10, 11, and 12 and their respective annexes.
Task 2. John Brown Fort, Building 63.

III. PROJECT SCOPE

Task 1. Upgrade existing hardware, doors, door frames, *and sills* at museum complex in Buildings 9, 10, 11, and 12 and their respective annexes. The project focus will be on the first floor of the complex; priorities are the main egress doors followed by the secondary exiting doors. Basement doors will be the third priority.

Update to include research into replacement of exiting hardware with more traditional yet functional hardware; panic hardware to remain, door swings will not be changed. Research and recommendations into appropriate wood species for door and door frame components. HPTC will develop a door schedule to document existing conditions and to make treatment recommendations.

Specific information will be provided for all hardware recommendations, samples will be provided where possible. Drawings will be provided for door and frame design as required.

Option 1. HPTC will arrange for a full scale mock-up of the approved replacement hardware system as a demonstration on a door chosen by the park. HPTC will arrange

for vendor to supply and install demonstration hardware, and replace with original or replacement hardware if not accepted by the park. NOTE, this option not included in base price for project; if park wishes HPTC to carry out this option add Option 1 amount to project total for final project amount. See Project Estimate, Section IX.

Task 2. Provide preservation recommendations for the John Brown Fort, Building 63. As a result of the past two floods serious fabric deterioration has been noticed. Repairs are to be designed so that work may be accomplished using in-house NPS preservation/ maintenance employees.

HPTC will provide an overall condition assessment report and will provide recommended treatment statements with drawings and specifications, as appropriate. HPTC will provide base line drawings for work using existing HABS drawings as base sheets, and will provide annotated photo-based report with treatment recommendations for park use.

IV. DATA COLLECTION

The development of this Project Agreement is based on numerous site meetings and telephone conversations with park management and staff in addition to background material. The following reports, correspondence, meetings, and site visits have been used to provide historical and/ or project related background information for this project, and to assist in the preparation of this Project Agreement.

Oct. 9, 1996	From: HAFE Architect, To: NCA Chief of Maintenance Subject: Design Assistance Request for PKG. 110 Doors, Bldg. 48, and John Brown Fort
Oct. 28, 1997	From: HAFE Superintendent, To: NCA Chief of Maintenance Subject: FY97 Project Reporting System - Compliance
Oct. 29, 1996	From: Superintendent HPTC, To: Superintendent HAFE Subject: HPTC Interest in Park Preservation Projects
Nov. 6, 1996	From: HAFE Superintendent, To: Chief, WPTC Subject: Storm/ Recovery Program 1997-98; Three Additional HAFE Design Projects for HPTC During 1997
Nov. 6, 1996	From: HAFE Architect, To: HPTC, NCR Mailing List Subject: Three New HAFE Design Projects for HPTC 1997

Nov. 14, 1996	On-site meeting with HAFE, HPTC and NCR Team Members Subject: Tour of flood/ storm damaged historic structures
Dec. 16, 1996	From: HAFE Architect, To: HAFE, HPTC Mailing List Subject: Request Confirmation and Schedule
Jan. 13, 1997	From: HAFE Architect, To: HPTC Subject: HPTC Design and Construction Work at HAFE in 1997
Jan. 21, 1997	On-site Meeting: HAFE Superintendent, Architect. HPTC Architect Team Leader Subject: Preliminary scope of project, schedule , and estimates
March 4, 1997	From: HPTC Architecture Team Leader, To: HAFE Architect/ Superintendent Subject: HPTC Project Update for Flood/ Storm Recovery Projects
March 19, 1997	On-site Meeting: HAFE, DSC, and HPTC Architects, Roofing Manufacturer representative Subject: Team coordination, evaluation of existing structures
March 26-7, 1997	Site work by HPTC Project Historical Architect & Team Leader Subject: Preliminary assessment of John Brown Fort
April 7, 1997	From: HPTC Architecture Team Leader, To: HAFE Architect/ Superintendent Subject: Status of HPTC Projects for HAFE, No. 2
April 7, 1997	On-site meeting: Superintendent, Assistant Superintendent HPTC, HAFE Park Architect Subject: Update HPTC Project Schedules for FY97 and FY98
April 9, 1997	From: HAFE Architect, To: HPTC, HAFE, DSC, and NCR Project Mailing List Subject: HPTC Project Schedule Update Request
May 6, 1997	On-site meeting; HPTC Architect Team Leader & HAFE Maintenance Foreman Subject: Inspection of PKG. 110 doorways, meet with Chief of Maintenance

V. COMPLIANCE

1. National Historic Preservation Act: Minimal historic building fabric will be disturbed as a result of this project, therefore no NHPA Section 106/ 110 compliance activities will be required for the design phase of the project. As per 10/28/96 memo, park has blanket compliance authority from the West Virginia State Historic Preservation Office to proceed with work on flood & storm damage projects throughout the park with documentation to be submitted later.

Compliance beyond that required for the National Historic Preservation Act, including all federal, state, regional and local compliance requirements and permits for this work is the responsibility of the park and shall be secured and furnished to the HPTC prior to commencement of work.

All HPTC design and treatment recommendations are in compliance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* and the *Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings*, and *NPS-28, Cultural Resource Management Guidelines*, Release No. 4.

2. Building Code and Life Safety Guidelines: HPTC treatment recommendations and project related design work complies with the following recommended guidelines as applies to the work undertaken by the scope of work identified in this Project Agreement:

- Building Officials and Code Administrator's (BOCA) National Building Code, 1996
- National Fire Protection Association (NFPA) Life Safety Code and Handbook, 1997
- Uniform Federal Accessibility Standards, 1991
- Americans with Disabilities Act Accessibility Guidelines

3. Project Related:

Task 1. No changes will be made to the exiting (panic) hardware and egress capacity of the museum complex. This project will have no impact on building code or life safety related issues. The NFPA Life Safety Code and Handbook will be used as the basis for evaluation of all door hardware criterion. Recommendations for reconstruction of existing doors and door frames will not impact other code related exiting requirements.

Task 2. The scope of this project, flood/ storm recovery repairs and preservation maintenance, will not impact any life safety or building code related issues.

VI. PROJECT COORDINATION

The success of any project depends on the timely coordination and completion of all necessary actions as outlined for each of the following parties to this Project Agreement, Task 1 and Task 2.

HPTC

Prepare Project Agreement including cost estimate and schedule.

Schedule and conduct project related meetings and review sessions as required to successfully complete project.

Coordinate field work, fabric investigation, documentation, etc., and phasing of the development of project documents, and meet as necessary with HAFE Park Architect *and HAFE Maintenance.*

Review all existing documentation including investigative and historical reports, correspondence, etc. for project development.

Designate a project architect/ supervisor to be primary point of contact with HAFE on project related issues.

Provide project supervision, team, materials, supplies, equipment, travel and transportation for all work performed by HPTC.

Provide project staff for duration of project to complete scope of work according to project schedule. Notify park management if slippage in project schedule becomes apparent, revise project schedule accordingly with park input.

Provide project products as specified in Section VII.

HAFE

Provide transfer of project funds to HPTC upon approval of Project Agreement.

Provide treatment and use decisions in a timely manner, and respond to all inquiries by HPTC staff for determination of design issues.

Designate a single project manager/ administrative contact to coordinate the park response to issues of treatment and use, review comments, etc. and with responsibility to communicate with HPTC and to act as liaison.

Provide copies of/ access to all known park files, reports, archives, library materials which may have a bearing on the outcome of this project.

Provide technical and review input and comments in a timely manner.

Provide keyed access to park structures as affected by this project.

Provide any necessary compliance documents prior to the start of work.

NCR

Provide professional support from Regional and system support office cultural resources staff for technical, compliance, and code related issues.

VII. PRODUCTS

Products to be furnished by the HPTC to HAFE as a result of the approval of this Project Agreement are listed below. All design and treatment recommendations will be prepared for implementation by NPS based preservation/ maintenance employees.

Task 1. Door Schedule and written report will address treatment recommendations for the improvement of the operation and maintenance of subject doors. Report will include brief condition assessment, inventory, and treatment recommendations for improving operability and maintenance. Drawings and specifications *(including technical information regarding manufacturers, products, warrenties, etc.)* will be provided.

Task 2. Base line drawings to document treatment recommendations; HPTC will use existing HABS and HAFE drawings as base sheets for presentation of treatment recommendations. Annotated photo-based report with condition assessment, inventory, and treatment recommendations will supplement the drawings and include specifications and details as required for implementation of the work.

Four copies of each document will be provided to the park. Any original photographs and negatives will be transmitted to the park at the completion of the project. Any original mylar drawing sheets will be transmitted to the National Capital Region, Stewardship and Partnerships, Division of Land Use Coordination Records Office, Room 208, 1100 Ohio Drive, SW, Washington, D.C. 20242, (202) 619-7124.

NOTE: Any Changes, Modifications, or Amendments to the approved Project Agreement will be documented through the use of the HPTC Design Change Approval Form, Appendix 1.

VIII. *1997* PROJECT SCHEDULE

- As per agreement of April 7, 1997
- Project Agreement by end of May 1997
- Transfer of funds upon park approval of Project Agreement
- Task 1: Project priority items completed by mid June 1997, secondary items to follow in July 1997
- Task 2: Project products completed by end of July 1997

IX. PROJECT COST ESTIMATE / BUDGET

Task 1: Including work to date, additional field work, hardware research, preparation of schedule and recommendations	$ 4000
Task 2: Including work to date, additional field work, preparation of treatment recommendations presentation	$ 3600
Travel and Transportation	$ 300
Reprographics and Copying	$ 1500
Sub Total	$ 9400
HPTC Overhead	$ 3100
Project Total	**$12500**
Option 1 (Overhead included)	$ 1600
PROJECT TOTAL WITH OPTION 1 ADDED	***$14100***

NOTE: HPTC salaries are calculated on a pay period basis. The hourly rate for each occupation is determined by combining the direct hourly pay rate plus benefits with a prorated amount for the indirect costs of annual and sick leave, holidays, and training. The number of pay periods is based upon an estimate of the total number of hours required for each team member to complete the required project tasks. As this is based on previous project experience with an approved scope of work this should be considered a Class B estimate.

X. PROJECT PARTICIPANTS

HAFE — Peter Dessauer, Park Architect, Project Manager
Tim Fox, Chief of Maintenance
Gayleen Boyd, Funding Point of Contact

HPTC Tom Vitanza AIA, Project Historical Architect, Project Manager
Doug Hicks, Assistant Superintendent
Norma Dale, Funding Point of Contact

XI. TRAINING OBJECTIVES

No formal training objectives have been developed as it is anticipated this project will be completed by HPTC senior staff. If interns or coop students become available during the course of this project training objectives will be developed. All work will be under direct supervision of Maryland Registered Architect.

XII. APPENDICES

A. HPTC Design Change Approval Form

End of Document

TAVitanza:tav:05/12/97:a:WP5.1/2:fsrp97pa.dpa
TAVitanza:tav:05/21/97:a:WP5.1/2:frsp97pa.fpa