

BENSON'S

Historic Structures Report

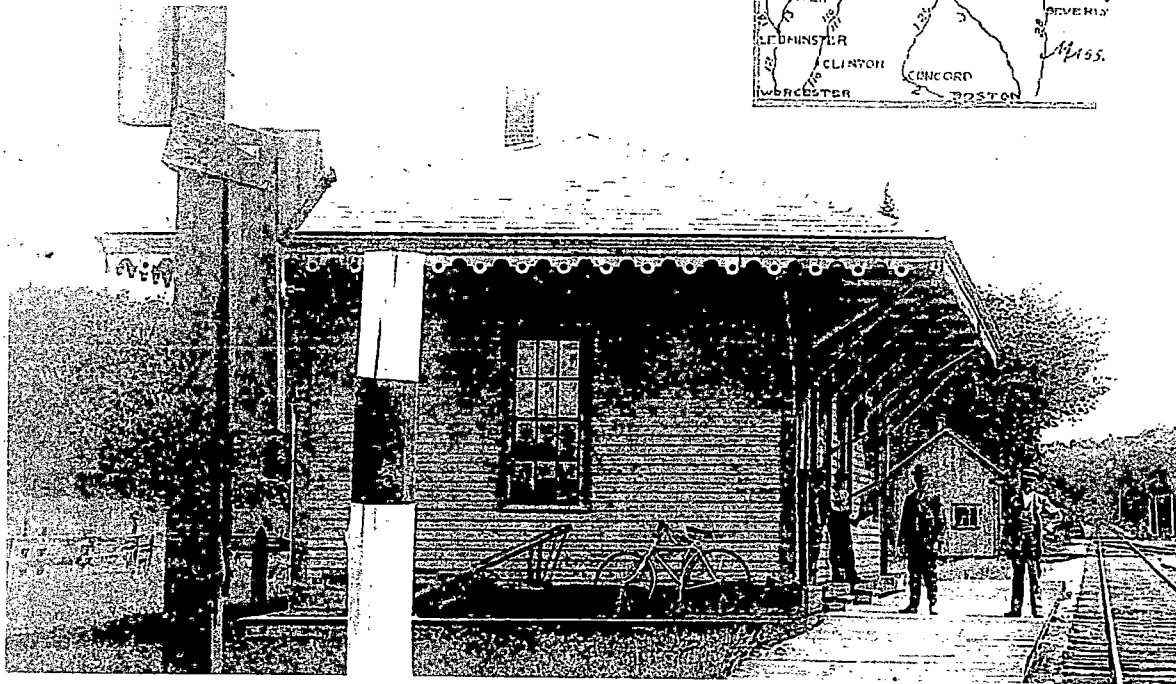
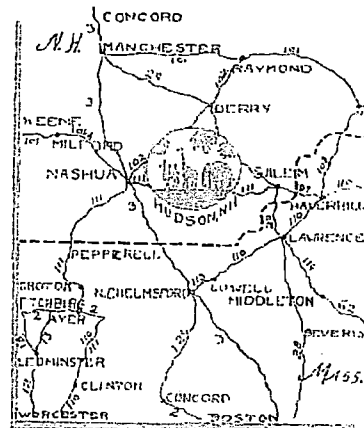
Benson's Property

Town of Hudson, New Hampshire

June 13, 2003 – 100% Submittal

B&M Railroad Depot

ALL ROADS LEAD TO BENSON'S



Historic Structures Report

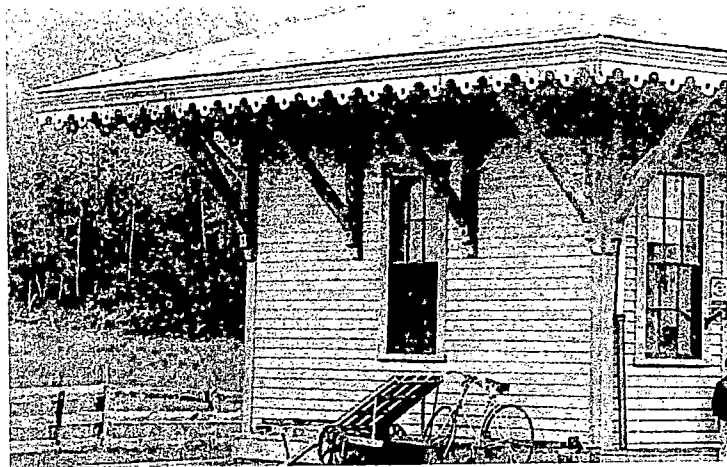
Benson's Property
Town of Hudson, New Hampshire
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B&M Railroad Depot

Feature Inventory and Condition Assessment



Exterior: Cornice and Gutter



Feature Description:

The Depot originally featured a boxed gutter and 4 leaders at the corners of the building. The leaders apparently discharged through leader extensions below the wood deck, which carried the rainwater away from the building. The boxed gutter was faced with an ogee profile wood cornice, and decorative eave boards. The eave boards show a repetitive pattern of stepped round and 1/2 round cuts. The soffit below the wide 6'-6" overhang was finished with beaded boards.

The functional and decorative features of the cornice were historically one of the principle character-defining features of the Depot. The eave boards created a distinctive pattern of light and dark against the shadows of the deep overhang, and were the only highly ornamental feature of the utilitarian structure. The boxed gutter and leaders conducted rainwater away from the building, and protected passengers from roof runoff.

Quantity:	Measurement unit:	Condition Rating:
1	Ea	Poor

Feature Condition:

The condition of the boxed gutters could not be determined with the existing tarp and asphalt roof. It is possible that they were covered over with asphalt shingles. The decorative eave boards have been removed, and the condition of the cornice moulding could not be determined. The leaders have also been removed, and the openings from the gutters patched in the board soffit. Examination from the attic interior showed that the existing flat eave boards have been damaged in some locations by rainwater intrusion and animals. It is anticipated that the overall condition of the gutters is poor. Restoration of the gutter and cornice features should take place in conjunction with the replacement of the roof after the building is moved to a permanent location.

Exterior: Cornice and Gutter

Treatment Type: Restoration

Priority: Medium

Treatment Description: Repair wood soffit

Repair or replace in-kind missing or damaged 1"x 6" T&G wood soffit boards

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
80 LF	\$3.08 LF	\$246.40
Treatment Reference:	CSI Division:	Division 6 - Wood and Plastics

Treatment Description: Paint new wood trim

Prepare wood by hand scraping with carbide blade tools, wash, and lightly sand. Brush apply two coats of oil-based primer, such as California brand "Trouble Shooter".

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
400 SF	\$2.25 SF	\$900.00
Treatment Reference:	CSI Division:	Division 9 - Finishes

Treatment Description: Install subsurface drainage for leaders

Drain 4 leaders to daylight using Schedule 40 PVC pipe on gravel base.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
60 LF	\$25.00 LF	\$1,500.00
Treatment Reference:	CSI Division:	Division 7 - Thermal and Moisture Protection

Exterior: Cornice and Gutter

Treatment Description: Install lead-coated copper leaders
Install 4" diameter lead coated copper leaders, matching outlet locations and bends shown on historic photographs.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
56 LF	\$12.50 LF	\$700.00
Treatment Reference:	CSI Division:	Division 7 - Thermal and Moisture Protection

2003 RS Means Repair and Remodeling Cost Data, page 163. Section 07710-3900.

Treatment Description: Install gutter lining and flashing
Install gutter lining: an elastomeric ice-and-water shield on the bottom; building felt; a slip-sheet of rosin paper; and copper on top (16, 18, or 20 ounce, depending on the dimensions of the gutter). Install on the roof decking above the gutter two feet of elastomeric ice-and-water shield (or copper flashing) and roof cladding over it.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
194 LF	\$7.50 LF	\$1,455.00
Treatment Reference:	CSI Division:	Division 7 - Thermal and Moisture Protection

See the New York Landmarks Conservancy document "Focus: Maintaining Built-In Gutters"
<<http://www.nylandmarks.org/publications/cbmaintaininggutters.html>> for architectural detail.

Treatment Description: Fabricate and install decorative eave board
The size and layout of the decorative eave board can be determined from proportional analysis of the historic photographs to exactly reproduce the size and profile of the replacement. A custom millwork shop can fabricate the material from 7/8" Northeastern White Pine stock.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
194 LF	\$25.50 LF	\$4,947.00
Treatment Reference:	CSI Division:	Division 6 - Wood and Plastics

Treatment Description: Repair/replace wood boxed gutter and cornice
Repair or replace in-kind the wood base of the boxed gutter with kiln-dried, pressure treated lumber, and slope toward outlets. Carefully note and document evidence of cornice and gutter dimensions or profile using paint shadows, nailing patterns, or other architectural fabric information. Repair any deteriorated rafter ends prior to boxed gutter installation. Repair or replace cornice moldings as needed.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
194 LF	\$15.85 LF	\$3,074.90
Treatment Reference:	CSI Division:	Division 7 - Thermal and Moisture Protection

2003 RS Means Repair and Remodeling Cost Data, page 131. Section 06220-2300 (adjusted for custom fabrication of cornice).

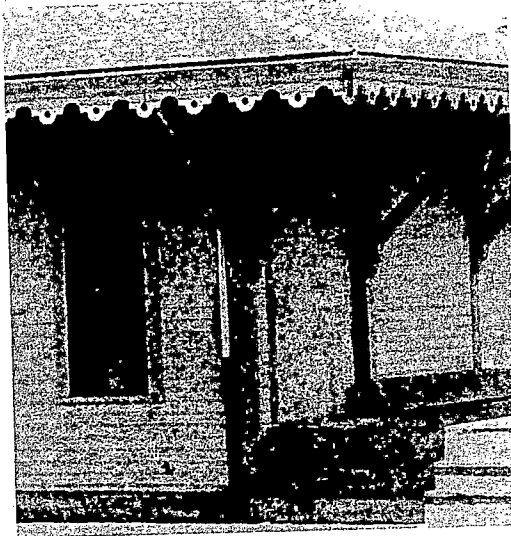
Exterior: Doors

Restoration Treatment Cost Total: \$1,350.00

References:

Photograph of Depot c. 1898, courtesy of Hudson Historical Society.

Exterior: Freight Door



Feature Description:

A vertical board freight door was originally placed on the (site) north elevation, with a raised platform consistent with the interior floor height of the Freight Room. Based on analysis of the historical photograph, the opening was approximately 8' x 8', and apparently slid on an interior track.

Quantity: 1
 Measurement unit: Ea

Condition Rating:
 Missing/unsalvageable

Feature Condition:

The freight door, track, and hardware are missing. It is extremely likely that physical evidence to document the exact dimensions, location, and track configuration will be exposed when the non-historic interior finishes are removed. Combined with the documentary evidence contained in the historic photograph, it should be possible to accurately reproduce the freight door.

Treatment Type: Restoration

Priority: Medium

Treatment Description: Reproduce historic freight door

Reproduce historic freight door to dimensions determined from architectural evidence.

Repair/Replacement Amount:

1 Ea

Unit Cost:

\$2,500.00 Ea

Repair/Replacement Cost:

\$2,500.00

Treatment Reference:

Costs from comparable projects

CSI Division:

Division 8 - Doors and Windows

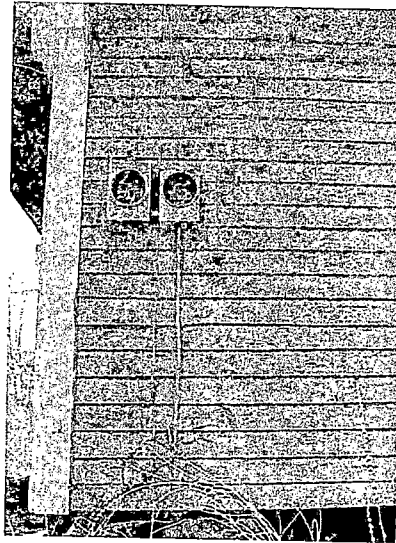
Restoration Treatment Cost Total:

\$2,500.00

References:

Photograph of Depot c. 1898, courtesy of Hudson Historical Society.

Exterior: Siding



Feature Description:

The exterior of the Depot is sheathed with beveled clapboard siding at 5" exposure. Some replacement of siding is evident on the (site) southeast elevation below and adjacent to the door.

Quantity:	Measurement unit:	Condition Rating:
1,414	SF	Good

Feature Condition:

The clapboard siding is in generally good condition, except for paint failure. Some areas of siding replacement will be required if non historic window openings are infilled.

Treatment Type: Preservation

Priority: High

Treatment Description: Exterior preparation and painting

Prepare wood by hand scraping with carbide blade tools, wash, and lightly sand. Brush apply two coats of oil-based primer, such as California brand "Trouble Shooter".

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
1414 SF	\$1.22 SF	\$1,725.08
Treatment Reference:	CSI Division:	Division 9 - Finishes

Exterior: Siding

Treatment Description: Limited repair/replacement of existing siding

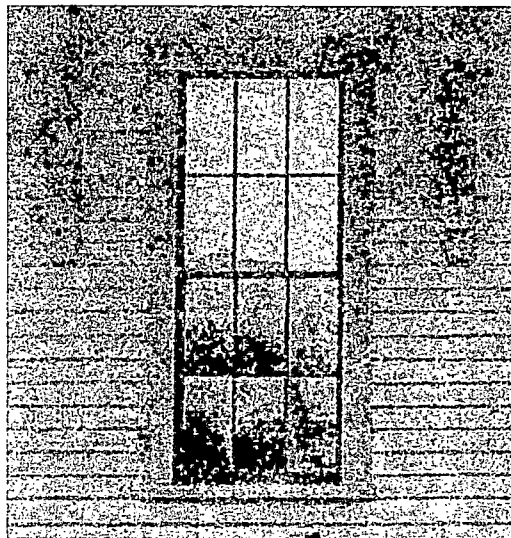
Match and install existing siding in-kind. Replace siding in-kind where non-historic opening locations are infilled.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
750 LF	\$1.95 LF	\$1,462.50
Treatment Reference:	CSI Division:	Division 6 - Wood and Plastics

Preservation Treatment Cost Total: \$3,187.58

References:

Exterior: Windows



Feature Description:

The original design of the Depot included eight 6/6 double-hung wood windows in a 34"x 76" opening. Exterior window casings are plain 6" boards at the jambs and head, with a beveled sill. Seven windows remain in their original locations.

Quantity:	Measurement unit:	Condition Rating:
8	Ea	Poor

Feature Condition:

Of the seven existing windows remaining in their original location, all are in extremely poor condition as a result of vandalism. The window sash are largely destroyed, and in several instances the frames have been heavily damaged as well. A non-historic window on the (site) northeast corner is in the location of a historic window opening.

Treatment Type: Restoration

Priority: Medium

Treatment Description: Reconstruct missing historic window

Reconstruct and install the missing historic window originally located in the (site) northeast corner of the building. Match the existing historic windows in materials, construction, joinery, and detailing.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
1 Ea	\$1,200.00 Ea	\$1,200.00
Treatment Reference:	CSI Division:	Division 8 - Doors and Windows

Exterior: Windows

Treatment Description: Remove non-historic window openings

Remove non-historic window openings and reinstate framing and sheathing to receive exterior and interior finishes. (See Exterior clapboard siding feature treatment recommendations.)

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
5 Ea	\$125.00 Ea	\$625.00
Treatment Reference:	CSI Division:	Division 8 - Doors and Windows

Treatment Description: Repair historic windows in-kind

Salvage all existing window sash units and components including sash weights and hardware. Fabricate missing or damaged sections of stile, rails and muntins to match historic profiles using No. 1 Northeastern White Pine. Reassemble windows using the original joinery methods. Obtain salvaged or reproduction glass to match imperfections in the historic glass. Brush apply two coats of oil-based primer, such as California brand "Trouble Shooter" to window sash. Note: exterior trim painting covered in Exterior wood brackets and trim feature.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
7 Ea	\$750.00 Ea	\$5,250.00
Treatment Reference:	CSI Division:	Division 8 - Doors and Windows

See Preservation Brief #9: The Repair of Historic Wooden Windows. <<http://www2.cr.nps.gov/tps/briefs/presbhom.htm>>

Restoration Treatment Cost Total: \$7,075.00

Treatment Type: Stabilization

Priority: High

Treatment Description: Install temporary ventilated window closure panels

Construct temporary window closure panels using 1/2" CDX plywood with 12" square lexan vision panels and prefabricated louvered ventilation screens. Bring the upper and lower sash of the double hung unit to the mid-point of the opening and install pre-cut plywood panels using long carriage bolts anchored into horizontal wooden bracing, or strong backs, on the inside face of the window. Do not screw or nail panels into window sash or casings. Paint the exterior of the plywood panels to retard delamination of the plywood. See Preservation Brief #31: Mothballing Historic Buildings <<http://www2.cr.nps.gov/tps/briefs/brief31.htm>>

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
12 Ea	\$189.00 Ea	\$2,268.00
Treatment Reference:	CSI Division:	Division 8 - Doors and Windows

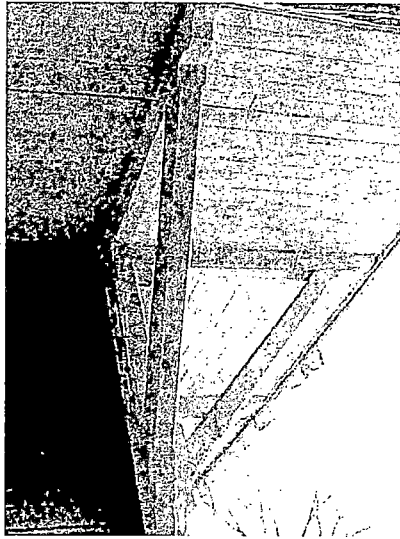
Cost based on comparable material and labor costs for similar stabilization projects. Louvered panels available from McMaster Carr Supply Company: <<http://www.mcmaster.com>> Use 12"x 18" natural aluminum, part No. 2038K62.

Stabilization Treatment Cost Total: \$2,268.00

References:

Photograph of Depot c. 1898, courtesy of Hudson Historical Society.

Exterior: Windows



Feature Description:

The principle decorative elements on the building exterior are the wooden brackets supporting the 6-foot wide roof overhang. Each long wall has 6 brackets. The (site) north elevation has only 3 brackets due to the former baggage door location. The (site) south elevation has 4 brackets, with 2 flanking the single window in that elevation. The brackets are simplified Italianate style with chamfered edges and simple scrolled ends.

Other exterior trim includes 1"x 6" corner boards, and door and window surrounds. Except for a slight projection of the horizontal exterior casing past the line of the vertical exterior casing, there is no embellishment of the door and window frames.

Quantity:	Measurement unit:	Condition Rating:
19	Ea	Good

Feature Condition:

The brackets are in good condition except for some paint failure.

Treatment Type: Preservation

Priority: High

Treatment Description: Prep and paint exterior wood trim

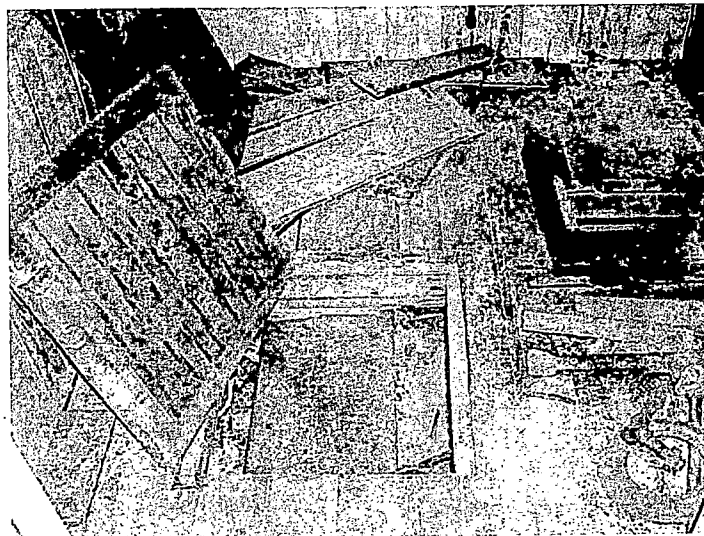
Prepare wood by hand scraping with carbide blade tools, wash, and lightly sand. Brush apply two coats of oil-based primer, such as California brand "Trouble Shooter".

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
570 SF	\$2.25 SF	\$1,282.50
Treatment Reference:	CSI Division:	Division 9 - Finishes

Preservation Treatment Cost Total: \$1,282.50

References:

Interior: Floors



Feature Description:

Original wood flooring is intact below added flooring materials

Quantity:
892

Measurement unit:
SF

Condition Rating:
Poor

Feature Condition:

Where visible, the floor is in generally good condition. Some patching and repair will be required prior to refinishing.

Treatment Type: Restoration

Priority: Medium

Treatment Description: Refinish wood floor in Freight Room

Repair/Replacement Amount:

351 SF

Unit Cost:

\$1.87 SF

Repair/Replacement Cost:

\$656.37

Treatment Reference:

2003 RS Means Repair and Remodeling Cost Data, page 225. Section 09648-7800.

CSI Division:

Division 9 - Finishes

Interior: Floors

Treatment Description: Repair/replace wood floor in Freight Room (25%)

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
87 SF	\$3.66 SF	\$318.42
Treatment Reference:	CSI Division:	Division 6 - Wood and Plastics

2003 RS Means Repair and Remodeling Cost Data, page 225. Section 09648-7600.

Treatment Description: Refinish wood floor in public spaces

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
540 SF	\$1.87 SF	\$1,009.80
Treatment Reference:	CSI Division:	Division 9 - Finishes

2003 RS Means Repair and Remodeling Cost Data, page 225. Section 09648-7800.

Treatment Description: Patch and repair floor in public spaces (25%)

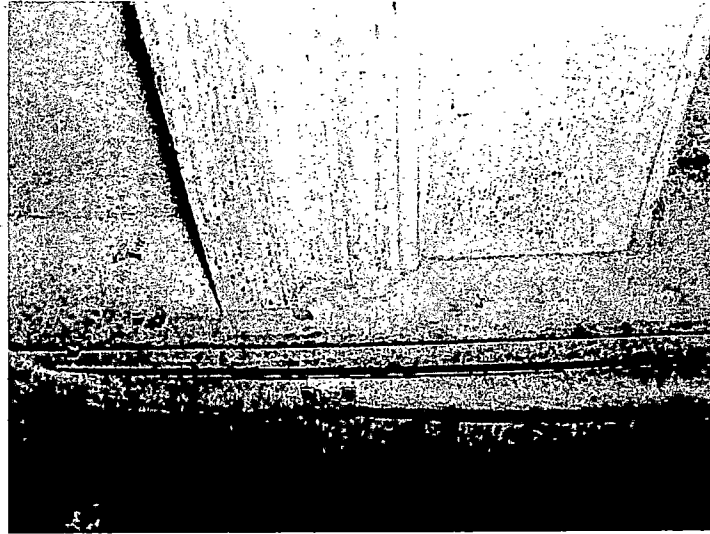
Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
135 SF	\$3.67 SF	\$495.45
Treatment Reference:	CSI Division:	Division 6 - Wood and Plastics

2003 RS Means Repair and Remodeling Cost Data, page 225. Section 09648-7600.

Restoration Treatment Cost Total: \$2,480.04

References:

Interior: Millwork



Feature Description:

Interior millwork consists of door and window frames and casings, chair rail, and vertical, beaded, T&G wainscot.

Quantity:	Measurement unit:	Condition Rating:
0		Fair

Feature Condition:

Much of the original millwork is preserved behind the later wall coverings.

Treatment Type: Restoration

Priority: Medium

Treatment Description: Repair/replace in-kind millwork and trim

Repair interior millwork and trim in-kind, duplicating the profiles and finish of the original. Salvage and reuse existing material to the greatest extent possible.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
866 SF	\$7.50 SF	\$6,495.00
Treatment Reference:	CSI Division:	Division 9 - Finishes

Restoration Treatment Cost Total: \$6,495.00

References:

Interior: Painting



Feature Description:

All interior wood trim and plastered walls and ceiling were painted.

Quantity:

Measurement unit:

Condition Rating:

0

Feature Condition:

Most of the original surfaces are hidden by later wall coverings. Paint analysis should be performed by an Architectural Conservator to determine the color and sequence of historic finishes.

Treatment Type: Restoration

Priority: Medium

Treatment Description: Paint architectural woodwork and trim

Repair/Replacement Amount:

866 SF

Unit Cost:

\$2.50 SF

Repair/Replacement Cost:

\$2,165.00

Treatment Reference:

CSI Division:

Division 9 - Finishes

Interior: Painting

Treatment Description: Paint plaster walls and ceiling

Allow new plaster to cure a minimum of two to three weeks before painting. A good alkaline-resistant primer, specifically formulated for new plaster, should then be used. Paint 2 coats, smooth finish, brush work only.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
1735 SF	\$0.64 SF	\$1,110.40

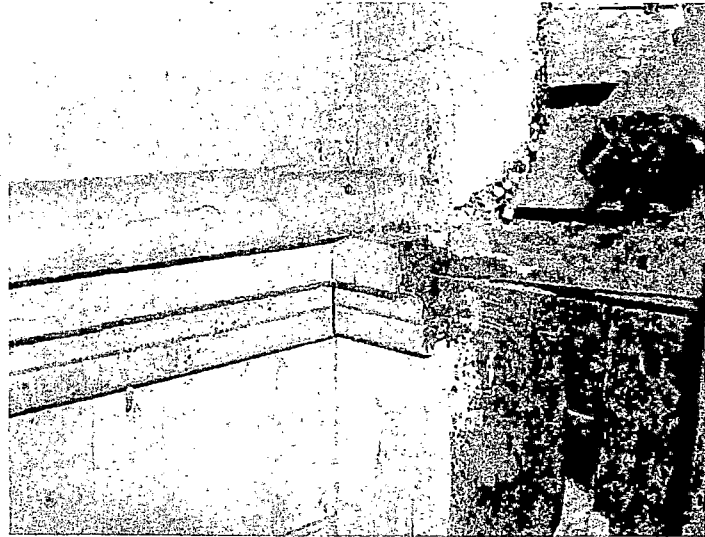
Treatment Reference: CSI Division: Division 9 - Finishes

2003 RS Means Repair and Remodeling Cost Data, page 238. Section 09910-2800..

Restoration Treatment Cost Total: \$3,275.40

References:

Interior: Plaster



Feature Description:

The interior walls and ceiling of the Waiting Rooms, Tool Room, Store Room, and Office were finished above the wainscot and chair rail with plaster on sawn wood lath.

Quantity:	Measurement unit:	Condition Rating:
1,196	SF	Poor

Feature Condition:

The condition of the interior plaster cannot be fully determined due to the presence of applied wall coverings. Where visible, it is in fair condition. Much of the existing plaster can be preserved and repaired.

Treatment Type: Rehabilitation

Priority: Medium

Treatment Description: Repair/replace plaster ceiling finish (50%)

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
270 SF	\$21.50 SF	\$5,805.00

Treatment Reference: CSI Division: Division 9 - Finishes

2003 RS Means Repair and Remodeling Cost Data, page 215. Section 09220-0400.

Rehabilitation Treatment Cost Total: \$5,805.00

Treatment Type: Restoration

Priority: Medium

Interior: Plaster

Treatment Description: Repair/replace plaster wall finish (50%)

Repair plaster in-kind on existing sawn wood lath

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
600 SF	\$21.50 SF	\$12,900.00
Treatment Reference:	CSI Division:	Division 9 - Finishes

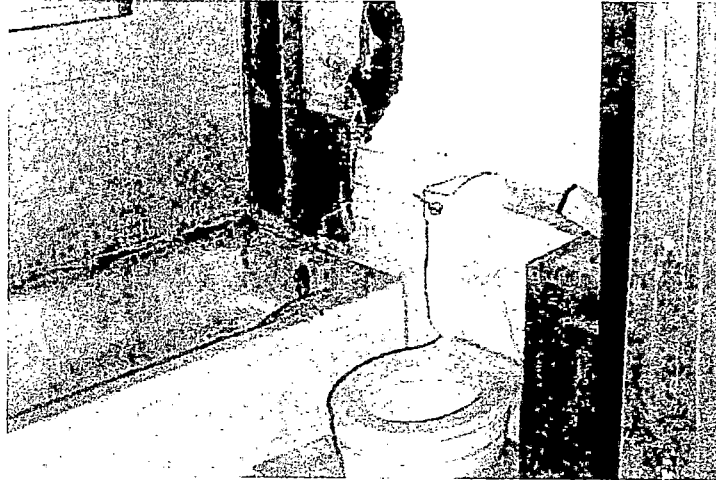
2003 RS Means Repair and Remodeling Cost Data, page 215. Section 09220-0300.

Restoration Treatment Cost Total: \$12,900.00

References:

See Preservation Brief #21: Repairing Historic Flat Plaster Walls and Ceilings.

Interior: Restroom



Feature Description:

The former railroad agent's office was remodeled into a bathroom when the Depot was adapted as a residence.

Quantity:	Measurement unit:	Condition Rating:
1	Ea	Missing/unsalvageable

Feature Condition:

The existing fixtures and finishes in the bathroom have been heavily vandalized, and are in any event, unsuited to use as a public restroom. The existing space is suitable for construction of an ADA compliant public restroom

Treatment Type: Rehabilitation

Priority: Medium

Treatment Description: Install unisex restroom

Rough-in and install and install fixtures as follows to provide a complete unisex public restroom:

- Water closet, wall mounted, one piece
- Rough-in waste and vent for water closet
- Lavatory, 20"x 18" porcelain enamel on cast iron with accessories
- Rough-in waste and vent for lavatory
- Toilet partition, painted metal between existing wall, floor mounted, with 36" grab bar
- Mirror, 18"x 24", with stainless steel shelf
- Soap dispenser, chrome, surface mounted
- Toilet tissue dispenser, surface mounted, stainless steel
- Towel dispenser, surface mounted, stainless steel

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
1 LS	\$3,516.90 LS	\$3,516.90

Treatment Reference:	CSI Division:	Division 15 - Mechanical
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2003 RS Means Repair and Remodeling Cost Data, page 445.

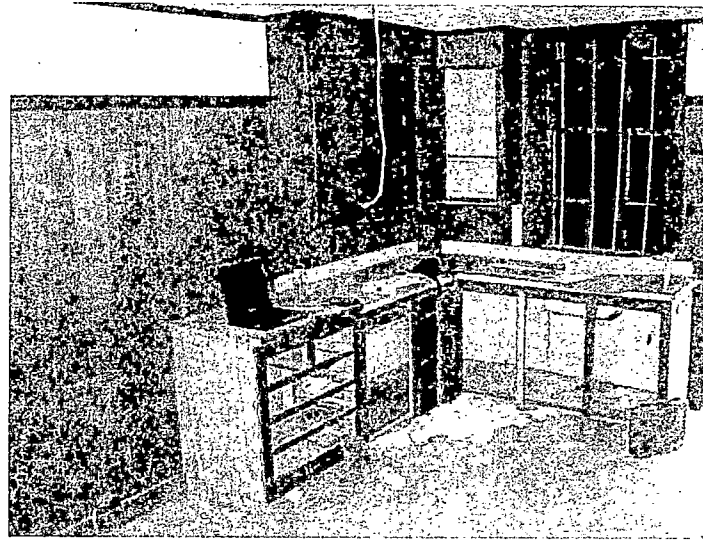
Rehabilitation Treatment Cost Total:	\$3,516.90
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References:

Interior: Restroom

Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities: <<http://www.access-board.gov/adaag/html/adaag.htm>>

Interior: Selective Demolition



Feature Description:

Contemporary interior finish materials, fixtures, and cabinets include plywood panelling,

Quantity:	Measurement unit:	Condition Rating:
1	Ea	Poor

Feature Condition:

The interior feature, finishes, and fixtures dating from the use of the structure as a residence are in poor condition due to vandalism and neglect. Removal of these features is required for rehabilitation of the building.

Treatment Type: Rehabilitation

Priority: Medium

Treatment Description: Demolish non-historic interior partitions

Remove non-historic interior partitions in the Freight Room area. This work should be done under the supervision of a preservation specialist to prevent damage to historic features, materials, and finishes to remain.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
40 LF	\$2.25 LF	\$90.00

Treatment Reference: CSI Division: Division 6 - Wood and Plastics

2003 RS Means Repair and Remodeling Cost Data, page 39. Section 02200-0230.

Interior: Selective Demolition

Treatment Description: Selective demolition

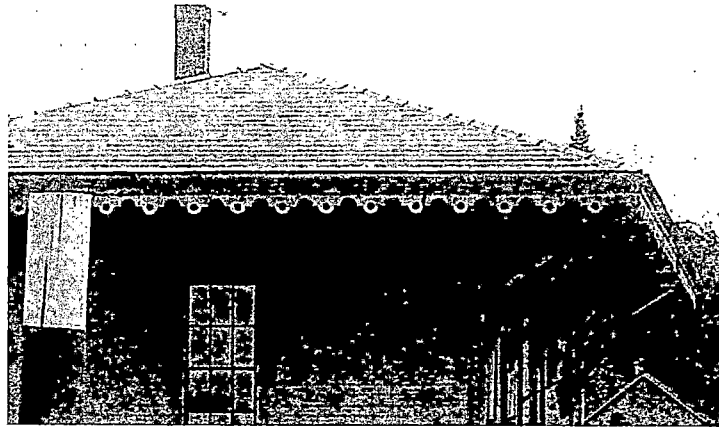
Removal and disposal of nonhistoric interior features such as wall paneling, dropped ceiling, cabinets, fixtures, etc. This work should be done under the supervision of a preservation specialist to prevent damage to historic features, materials, and finishes to remain.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
1000 SF	\$5.10 SF	\$5,100.00
Treatment Reference:	CSI Division:	Division 6 - Wood and Plastics
2003 RS Means Repair and Remodeling Cost Data, page 36. Section 02200-0580.		

Rehabilitation Treatment Cost Total: \$5,190.00

References:

Roof



Feature Description:

The hip roof is constructed at 5:12 slope. The original slate roof shown in the historic photographs was removed and the existing asphalt shingles were installed, possibly during the remodeling of the Depot into a residence. The existing asphalt shingle roof is failing and allowing water into the structure, which is presently covered with a tarp, secured at the eaves.

The slate roof shown in the historic photographs is clearly original. The substantial roof structure was designed to carry the added weight of a slate roof. The photographs of the slate roof show 22 courses of slates, which (omitting the width of the built-in gutter at approximately 8") is approximately 9-1/2" exposure. Good roofing practice indicates use of 22-inch slates with a 4" head lap.

There is no remaining example of the type or color of slates originally used, although the photographs show a smooth texture and uniform, rather than variegated, color. The two probable sources for roofing slates during the period of construction were Monson, Maine and Rutland County, Vermont. The Monson slate was typically black in color. Vermont slates had a wider color range including green, purple, and black. Additional research into B&M Railroad archival sources may provide some documentation of the type of slate originally used. However, Monson slate is no longer produced for roofing products. Virginia Buckingham slates are one of the closest available matches, and provide exceptional longevity.

The original slate roof is one of the principle character-defining features of the original Depot. Ultimate restoration of the slate roof, while expensive, can help establish the Depot as a signature structure of the Bensons Park. In addition, slate roofs are the most durable, and low-maintenance roofing type, with a life span in excess of 100 years.

Quantity:	Measurement unit:	Condition Rating:
2,270	SF	Poor

Feature Condition:

The existing asphalt shingle roof is in poor condition, and has been temporarily stabilized by tarping the roof. Although the tarp has been adequately secured with strapping at the eaves, the poly-coated blue tarps break down quickly under ultra-violet exposure and become useless. The tarp is beginning to fail in several locations, particularly along the eaves on the (site) west elevation.

Roof

Treatment Type: Restoration

Priority: Medium

Treatment Description: Install new slate roof

Install new Buckingham slate roof, standard roof pattern, using 22" x 12" slates at 9-1/2" exposure with saddle ridge and gables. Price per square includes slate punched and delivered. #30 felt, and copper nails.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
26 SQ	\$829.10 SQ	\$21,556.60

Treatment Reference: CSI Division: Division 7 - Thermal and Moisture Protection

See the Virginia Slate Company: <<http://www.virginiaslate.com>>. See also, Joseph Jenkins. The Slate Roof Bible. Chelsea Green Publishing Company, PO Box 428, White River Junction, VT. 05001

Restoration Treatment Cost Total: \$21,556.60

Treatment Type: Stabilization

Priority: High

Treatment Description: Apply temporary roll roofing

Install 1 ply #15 organic felt, 1 ply mineral surfaced selvage roofing, lap 19", nailed and mopped. Installation of rolled roofing is a temporary stabilization measure to protect the structure for a period of 3-5 years pending installation of a permanent roof surface, after the building is moved to a permanent location.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
23 SQ	\$149.00 SQ	\$3,427.00

Treatment Reference: CSI Division: Division 7 - Thermal and Moisture Protection

2003 RS Means Repair and Remodeling Cost Data, page 159. Section 07580-0200.

Stabilization Treatment Cost Total: \$3,427.00

References:

Photograph of Depot c. 1898, courtesy of Hudson Historical Society.

Roof: Chimney



Feature Description:

The chimney historically served as the flue for a wood stove(s) used to heat the Depot. The historic photographs show a projection of 12 courses above the high point of the roof, with an additional three courses of brick making up a slightly projected cap.

Quantity:	Measurement unit:	Condition Rating:
1	Ea	Poor

Feature Condition:

The brick chimney has been dismantled to a point below the roof line, probably in conjunction one of the moves. The base of the chimney was needed during the relocation of the structure, and does not appear to have suffered any structural movement. However the visible portion of the chimney in the attic space is badly deteriorated due to apparent flashing failure, allowing water to run down the outside face of the chimney to the interior of the attic space. The wood roof joists, headers, and sheathing are all badly deteriorated in proximity to the chimney.

Treatment Type: Restoration

Priority: High

Treatment Description: Repair/replace damaged rafters and headers

Replace deteriorated headers at chimney opening, sister damaged rafters, and replace damaged areas of adjacent sheathing

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
1 LS	\$1,200.00 LS	\$1,200.00

Treatment Reference: CSI Division: Division 6 - Wood and Plastics

Comparable project costs

Restoration Treatment Cost Total: \$1,200.00

Priority: Medium

Roof: Chimney

Treatment Description: Reconstruct brick chimney

Reconstruct brick chimney to match historic height and profile after relocation of structure to permanent site. Use replacement brick that are compatible in size, color, texture, hardness, and physical properties to the existing. Use a mortar that matches the existing in color, and and physical properties. Perform chimney restoration work in conjunction with roof replacement and install new lead-coated copper step and counter flashing.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
42 LS	\$45.00 LS	\$1,890.00

Treatment Reference: CSI Division: Division 4 - Masonry

Comparable project costs for repair of historic masonry.

Treatment Description: Dismantle deteriorated section of chimney

Dismantle chimney to sound masonry at ceiling joist line. Salvage sound brick for cleaning and reuse. (Sound brick produces a ringing tone if tapped with a hammer.)

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
1 LS	\$400.00 LS	\$400.00

Treatment Reference: CSI Division: Division 4 - Masonry

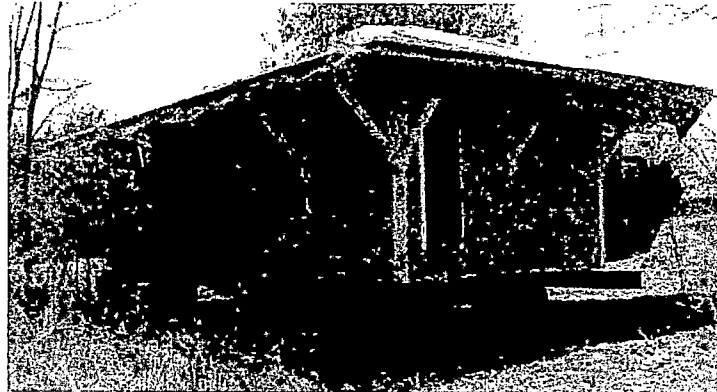
Comparable cost from similar projects at \$45/CF.

Restoration Treatment Cost Total: \$2,290.00

References:

See Preservation Brief #1: Repointing Mortar Joints in Historic Masonry.
<<http://www2.cr.nps.gov/tps/briefs/presbhom.htm>>

Site: Foundation



Feature Description:

In it's original location the Depot was constructed on a footing of 10" x 10" granite blocks, with the Waiting Room floor level at 2'- 9" above grade

Quantity: 1
Measurement unit: Ea

Condition Rating:
Missing/unsalvageable

Feature Condition:

The Depot is suspended on timber cribbing and steel needle beams pending relocation to final site.

Treatment Type: Rehabilitation

Priority: Medium

Treatment Description: Move building

Move Building and install on new foundation. Since the building is already cribbed and needed, the SF foot cost is reduced by 1/2 from the standard SF costs of \$13.10.

Repair/Replacement Amount:

1000 SF

Unit Cost:

\$6.55 SF

Repair/Replacement Cost:

\$6,550.00

Treatment Reference:

CSI Division:

Division 2 - Sitework

2003 RS Means Repair and Remodeling Cost Data, page 64. Section 02290-0040.

Site: Foundation

Treatment Description: Excavate for new foundations

Trenching and excavation for new foundation at final building site. Cost includes moderate site difficulty and potential ledge. 5.5 days at \$600/day.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
150 CY	\$22.00 CY	\$3,300.00

Treatment Reference: CSI Division: Division 2 - Sitework

Cost data source: National Park Service, Denver Service Center Class "C" Estimating Guideline (2001)

Treatment Description: Construct new concrete foundation

Construct new 12" concrete foundation on spread footings below frost line.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
40 CY	\$352.00 CY	\$14,080.00

Treatment Reference: CSI Division: Division 3 - Concrete

Cost data source: National Park Service, Denver Service Center Class "C" Estimating Guideline (2001)

Treatment Description: Light grading and revegetation

Restore site around new building location

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
1500 SF	\$0.30 SF	\$450.00

Treatment Reference: CSI Division: Division 2 - Sitework

Cost data source: National Park Service, Denver Service Center Class "C" Estimating Guideline (2001)

Treatment Description: Backfill foundation excavation

Backfill new foundation excavation.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
75 CY	\$8.65 CY	\$648.75

Treatment Reference: CSI Division: Division 2 - Sitework

Cost data source: National Park Service, Denver Service Center Class "C" Estimating Guideline (2001)

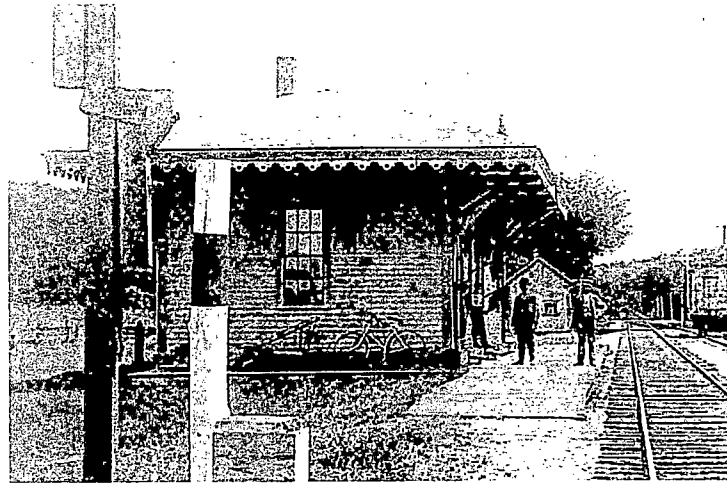
Rehabilitation Treatment Cost Total: \$25,028.75

Site: Foundation

References:

B&MRR Valuation Record, Book 6NH, pages 47-50. 6/14/1916. Interstate Commerce Commission. Courtesy
Duane King, Benson's Committee.

Site: Platform



Feature Description:

The c. 1898 photographs of the Depot in the collection of the Hudson Historical Society show a wood platform surrounding the building. The finish floor level of the building at 24" above the platform surface, was reached by three steps of 8". The Freight Room door at 42" above the platform level was accessed by means of a secondary platform with three steps on a 12' wide freight platform. The foundation is covered on all sides of the building by a 16" skirt board and narrow step.

Quantity:	Measurement unit:	Condition Rating:
1	Ea	Missing/unsalvageable

Feature Condition:

No remnant remains of the historic platform. However there is sufficient evidence in the historic photographs to reconstruct the feature with adaptations for ADA compliant accessibility.

Treatment Type: Rehabilitation

Priority: Low

Treatment Description: Install handicapped lift

Install handicapped lift in raised platform at Freight room entrance.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
1 LS	\$9,200.00 LS	\$9,200.00
Treatment Reference:	CSI Division:	Division 14 - Conveying Systems

Cost data source: National Park Service, Denver Service Center Class "C" Estimating Guideline (2001). See also, Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities: <<http://www.access-board.gov/adaag/html/adaag.htm>>

Rehabilitation Treatment Cost Total: \$9,200.00

Priority: Medium

Site: Platform

Treatment Description: Construct platform and ADA compliant ramp

Reconstruct the platform as shown in the c. 1898 photographs, with modifications to provide an ADA compliant ramp to the center Waiting Room door.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
1500 SF	\$14.60 SF	\$21,900.00

Treatment Reference:	CSI Division:	Division 2 - Sitework
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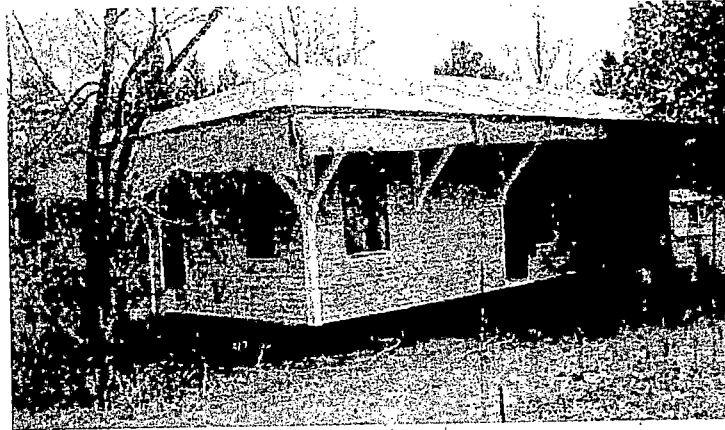
Cost data source: National Park Service, Denver Service Center Class "C" Estimating Guideline (2001). See also, Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities: <<http://www.access-board.gov/adaag/html/adaag.htm>>

Rehabilitation Treatment Cost Total:	\$21,900.00
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References:

Photograph of Depot c. 1898, courtesy of Hudson Historical Society. B&MRR Valuation Record, Book 6NH, pages 47-50. 6/14/1916. Interstate Commerce Commission. Courtesy Duane King, Benson's Committee. (Record shows gravel apron trackside)

Site: Utilities



Feature Description:

There are no site utilities at this location

Quantity: 1 Measurement unit: Ea

Condition Rating:
Missing/unsalvageable

Feature Condition:

Installation of new utility systems will take place after relocation of the structure to a permanent site.

Treatment Type: Rehabilitation

Priority: Medium

Treatment Description: Install natural gas line

Install natural gas line, with meter and regulator

Repair/Replacement Amount:

100 LF

Unit Cost:

\$29.20 LF

Repair/Replacement Cost:

\$2,920.00

Treatment Reference:

CSI Division:

Division 15 - Mechanical

Cost data source: National Park Service, Denver Service Center Class "C" Estimating Guideline (2001)

Site: Utilities

Treatment Description: Install water line

Install 2" galvanized water supply line to main. In-place cost includes excavation and backfill.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
100 LF	\$29.20 LF	\$2,920.00

Treatment Reference: CSI Division: Division 15 - Mechanical

Cost data source: National Park Service, Denver Service Center Class "C" Estimating Guideline (2001)

Treatment Description: Water meter and box

Install water meter and box in visually non-intrusive location.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
1 LS	\$703.00 LS	\$703.00

Treatment Reference: CSI Division: Division 15 - Mechanical

Cost data source: National Park Service, Denver Service Center Class "C" Estimating Guideline (2001)

Treatment Description: Electrical service connection

Connect electrical service to public line.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
1 LS	\$2,600.00 LS	\$2,600.00

Treatment Reference: CSI Division: Division 16 - Electrical

Cost data source: National Park Service, Denver Service Center Class "C" Estimating Guideline (2001)

Treatment Description: Install electrical meter and pedestal

Install electric meter on pedestal, removed from the building in a visually non-intrusive area.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
1 LS	\$1,840.00 LS	\$1,840.00

Treatment Reference: CSI Division: Division 16 - Electrical

Cost data source: National Park Service, Denver Service Center Class "C" Estimating Guideline (2001)

Site: Utilities

Treatment Description: Install electric power line underground

Install electric power, telephone, and cable lines underground in PVC conduit.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
100 LF	\$43.20 LF	\$4,320.00

Treatment Reference: CSI Division: Division 16 - Electrical

Cost data source: National Park Service, Denver Service Center Class "C" Estimating Guideline (2001)

Treatment Description: Utility connection - sewer

Connect to Town sewer line on Kimball Hill Road

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
1 LS	\$2,600.00 LS	\$2,600.00

Treatment Reference: CSI Division: Division 15 - Mechanical

Cost data source: National Park Service, Denver Service Center Class "C" Estimating Guideline (2001)

Treatment Description: Install sewer line

Install 4" ductile iron sere piping. In-place cost includes excavation and backfill. Hook into city sewer line on Kimball Hill Road.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
100 LF	\$33.50 LF	\$3,350.00

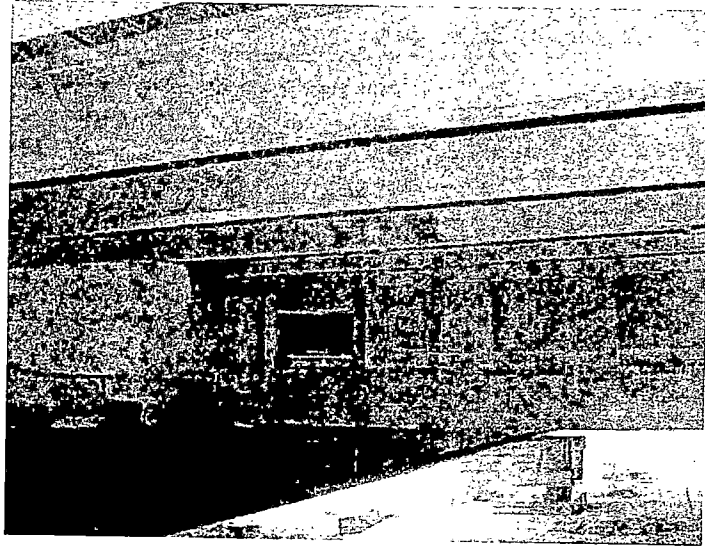
Treatment Reference: CSI Division: Division 15 - Mechanical

Cost data source: National Park Service, Denver Service Center Class "C" Estimating Guideline (2001)

Rehabilitation Treatment Cost Total: \$21,253.00

References:

Structure: Floor Framing



Feature Description:

The floors are framed with 2" x9" circular sawn joists on 24" centers. The photograph above shows the difference in floor level between the Freight Room and Waiting Room. Sills are 6"x 8" circular sawn timbers.

Quantity:

Measurement unit:

Condition Rating:

0

Good

Feature Condition:

The floor system is in good condition, and adequate to the proposed uses.

References:

Structure: Roof Framing



Feature Description:

The hipped roof is framed with 2"x 7" rafters nailed into a 2x ridge board. The roof is sloped at a 5:12 pitch and sheathed with 1" boards, which originally carried a slate roof.

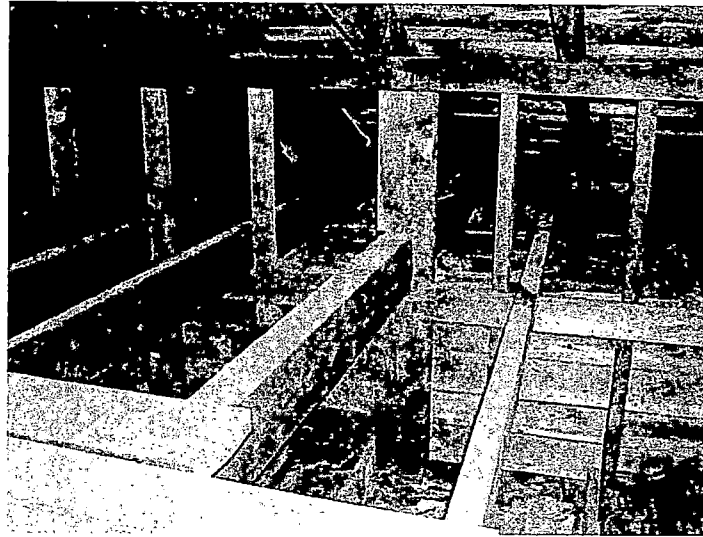
Quantity:	Measurement unit:	Condition Rating:
1	Ea	Good

Feature Condition:

The roof framing is in good condition except as noted under the chimney feature, where the headers and rafter ends intersecting the chimney require repair. Some deterioration of rafter tails and cripples is evident on the (site) north elevation and should be repaired when the roof installation is performed.

References:

Structure: Wall Framing



Feature Description:

The building is constructed in a transitional form of the balloon frame, meaning that the frame is constructed predominantly of sawn 2x framing members running continuously from the foundation sill plate to the roof plate. The wall framing is composed mostly of 2"x 4" studs on 24" centers. In this instance however, intermediate 4"x 8" vertical posts are placed inline with the stud walls at the roof bracket locations to help support the heavy load of the projected roof overhang. The wall and corner posts are mortise and tenoned into the sill and roof plates, and secured with wooden pegs, as in a timber frame building. The 2"x 4" studs are tenoned into blind mortises in the plates (i.e., the tenons do not extend completely through the plates).

Ribband boards let into the wall posts and studs carry the 2"x 7" ceiling joists which are spaced at approximately 2'-0" on center, and also serve to brace the frame. On the long walls, the ceiling joists are seated in shallow notches on the ribband boards, and continue past the rafter plate line to lap the rafter ends, making a nailing surface for the tongue & groove soffit boards on the underside of the roof overhang. On the short walls, the 2"x 4" studs are notched to receive a 4"x 7" transverse plate which stabilizes the end walls, in line with the ceiling joists. Cripples of 2"x 7" stock nailed to the studs and rafter ends provide a nailing surface for the soffit boards on the underside of the roof overhang.

Quantity:

Measurement unit:

Condition Rating:

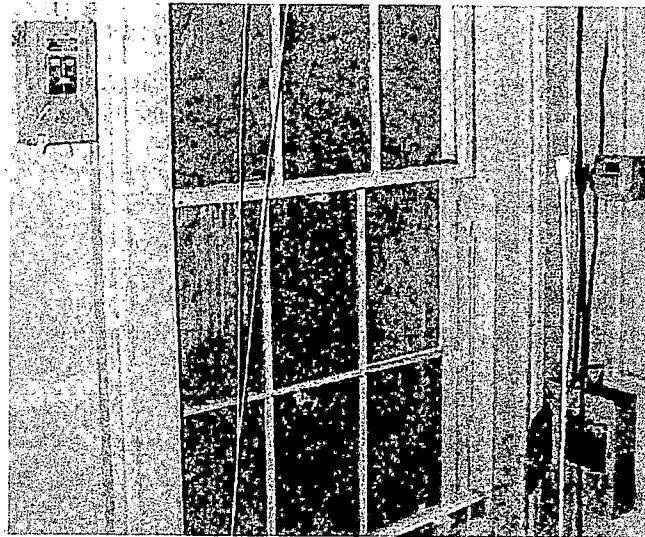
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Feature Condition:

The structural framing of the building is in very good condition and does not require remedial work at this time.

References:

Utilities



Feature Description:

The building has no existing functional utility systems. Rehabilitation of the structure will require installation of new mechanical, electrical, and plumbing systems. All work should be done in a manner that minimizes damage to original architectural fabric.

Quantity:	Measurement unit:	Condition Rating:
1	LS	Missing/unsalvageable

Feature Condition:

Remnants of the heating system duckwork are visible in the floor system of the existing structure. One heating register apparently predates this system. The existing bathroom fixtures have been removed or destroyed by vandals, and are unsalvageable. The existing electrical wiring is inadequate for public use.

Treatment Type: Rehabilitation

Priority: Medium

Treatment Description: Install gas-fired hot air heating system

Install AFA certified gas furnace with gas piping, 44MBH
 Galvanized steel ducts with blaket type insulation
 6" diameter flexible, round duct
 12"x 6" baseboard registers
 36"x 18" return and damper

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
1000 SF	\$5.78 SF	\$5,780.00

Treatment Reference:	CSI Division:	Division 15 - Mechanical
2003 RS Means Repair and Remodeling Cost Data, page.461		

Utilities

Treatment Description: New electrical service, distribution, and wiring.

Install commercial electrical service including service breakers, metering, 120/208 Volt, 3 phase, 4 wire, feeder, and panel board. Install panel board and service breakers in the Tool Room. Do not surface mount meter on the face of the building
 Install new wiring throughout building.

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
1000 SF	\$9.23 SF	\$9,230.00

Treatment Reference: **CSI Division:** Division 16 - Electrical

Cost data source: National Park Service, Denver Service Center Class "C" Estimating Guideline (2001)

Treatment Description: Install fire alarm system

Install fire detection and alarm system

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
1000 SF	\$3.79 SF	\$3,790.00

Treatment Reference: **CSI Division:** Division 16 - Electrical

Cost data source: National Park Service, Denver Service Center Class "C" Estimating Guideline (2001)

Treatment Description: Install hot water heater

40 gallon gas fired water heater

Repair/Replacement Amount:	Unit Cost:	Repair/Replacement Cost:
1 LS	\$605.00 LS	\$605.00

Treatment Reference: **CSI Division:** Division 15 - Mechanical

2003 RS Means Repair and Remodeling Cost Data, page 326.

Rehabilitation Treatment Cost Total: \$19,405.00

References:

Treatment Cost Summary: B&M Railroad Depot

Treatment Type: Preservation

Priority	Feature Name	Treatment Description	Quantity	Unit Cost	Total Cost
High	Exterior: Siding	Exterior preparation and painting	1,414 SF	\$1.22	\$1,725.08
High	Exterior: Siding	Limited repair/replacement of existing siding	750 LF	\$1.95	\$1,462.50
High	Exterior: Wood Brackets and Trim	Prep and paint exterior wood trim	570 SF	\$2.25	\$1,282.50
Total High Priority Preservation Treatment Costs:					\$4,470.08

Total Preservation Treatment Cost: \$4,470.08

Treatment Type: Rehabilitation

Priority	Feature Name	Treatment Description	Quantity	Unit Cost	Total Cost
Low	Site: Platform	Install handicapped lift	1 LS	\$9,200.00	\$9,200.00
Total Low Priority Rehabilitation Treatment Costs:					\$9,200.00

Medium	Interior: Plaster	Repair/replace plaster ceiling finish (50%)	270 SF	\$21.50	\$5,805.00
Medium	Interior: Restroom	Install unisex restroom	1 LS	\$3,516.90	\$3,516.90
Medium	Interior: Selective Demolition	Selective demolition	1,000 SF	\$5.10	\$5,100.00
Medium	Interior: Selective Demolition	Demolish non-historic interior partitions	40 LF	\$2.25	\$90.00
Medium	Site: Foundation	Construct new concrete foundation	40 CY	\$352.00	\$14,080.00
Medium	Site: Foundation	Excavate for new foundations	150 CY	\$22.00	\$3,300.00
Medium	Site: Foundation	Move building	1,000 SF	\$6.55	\$6,550.00

Treatment Cost Summary: B&M Railroad Depot

Treatment Type: Rehabilitation

Priority	Feature Name	Treatment Description	Quantity	Unit Cost	Total Cost
Medium	Site: Foundation	Backfill foundation excavation	75 CY	\$8.65	\$648.75
Medium	Site: Foundation	Light grading and revegetation	1,500 SF	\$0.30	\$450.00
Medium	Site: Platform	Construct platform and ADA compliant ramp	1,500 SF	\$14.60	\$21,900.00
Medium	Site: Utilities	Install water line	100 LF	\$29.20	\$2,920.00
Medium	Site: Utilities	Install natural gas line	100 LF	\$29.20	\$2,920.00
Medium	Site: Utilities	Install sewer line	100 LF	\$33.50	\$3,350.00
Medium	Site: Utilities	Utility connection - sewer	1 LS	\$2,600.00	\$2,600.00
Medium	Site: Utilities	Install electric power line underground	100 LF	\$43.20	\$4,320.00
Medium	Site: Utilities	Install electrical meter and pedestal	1 LS	\$1,840.00	\$1,840.00
Medium	Site: Utilities	Electrical service connection	1 LS	\$2,600.00	\$2,600.00
Medium	Site: Utilities	Water meter and box	1 LS	\$703.00	\$703.00
Medium	Utilities	Install hot water heater	1 LS	\$605.00	\$605.00
Medium	Utilities	Install gas-fired hot air heating system	1,000 SF	\$5.78	\$5,780.00
Medium	Utilities	New electrical service, distribution, and wiring.	1,000 SF	\$9.23	\$9,230.00
Medium	Utilities	Install fire alarm system	1,000 SF	\$3.79	\$3,790.00
Total Medium Priority Rehabilitation Treatment Costs:					\$102,098.65
Total Rehabilitation Treatment Cost:		\$111,298.65			

Treatment Cost Summary: B&M Railroad Depot

Treatment Type: Restoration

Priority	Feature Name	Treatment Description	Quantity	Unit Cost	Total Cost
High	Roof: Chimney	Repair/replace damaged rafters and headers	1 LS	\$1,200.00	\$1,200.00
Total High Priority Restoration Treatment Costs:					\$1,200.00
Medium	Exterior: Cornice and Gutter	Paint new wood trim	400 SF	\$2.25	\$900.00
Medium	Exterior: Cornice and Gutter	Repair wood soffit	80 LF	\$3.08	\$246.40
Medium	Exterior: Cornice and Gutter	Install subsurface drainage for leaders	60 LF	\$25.00	\$1,500.00
Medium	Exterior: Cornice and Gutter	Install lead-coated copper leaders	56 LF	\$12.50	\$700.00
Medium	Exterior: Cornice and Gutter	Fabricate and install decorative eave board	194 LF	\$25.50	\$4,947.00
Medium	Exterior: Cornice and Gutter	Repair/replace wood boxed gutter and cornice	194 LF	\$15.85	\$3,074.90
Medium	Exterior: Cornice and Gutter	Install gutter lining and flashing	194 LF	\$7.50	\$1,455.00
Medium	Exterior: Doors	Repair historic doors and casings	3 Ea	\$450.00	\$1,350.00
Medium	Exterior: Freight Door	Reproduce historic freight door	1 Ea	\$2,500.00	\$2,500.00
Medium	Exterior: Windows	Remove non-historic window openings	5 Ea	\$125.00	\$625.00
Medium	Exterior: Windows	Repair historic windows in-kind	7 Ea	\$750.00	\$5,250.00
Medium	Exterior: Windows	Reconstruct missing historic window	1 Ea	\$1,200.00	\$1,200.00
Medium	Interior: Floors	Repair/replace wood floor in Freight Room (25%)	87 SF	\$3.66	\$318.42
Medium	Interior: Floors	Refinish wood floor in public spaces	540 SF	\$1.87	\$1,009.80
Medium	Interior: Floors	Patch and repair floor in public spaces (25%)	135 SF	\$3.67	\$495.45

Treatment Cost Summary: B&M Railroad Depot

Treatment Type: Restoration

Priority	Feature Name	Treatment Description	Quantity	Unit Cost	Total Cost
Medium	Interior: Floors	Refinish wood floor in Freight Room	351 SF	\$1.87	\$656.37
Medium	Interior: Millwork	Repair/replace in-kind millwork and trim	866 SF	\$7.50	\$6,495.00
Medium	Interior: Painting	Paint architectural woodwork and trim	866 SF	\$2.50	\$2,165.00
Medium	Interior: Painting	Paint plaster walls and ceiling	1,735 SF	\$0.64	\$1,110.40
Medium	Interior: Plaster	Repair/replace plaster wall finish (50%)	600 SF	\$21.50	\$12,900.00
Medium	Roof	Install new slate roof	26 SQ	\$829.10	\$21,556.60
Medium	Roof: Chimney	Reconstruct brick chimney	42 LS	\$45.00	\$1,890.00
Medium	Roof: Chimney	Dismantle deteriorated section of chimney	1 LS	\$400.00	\$400.00
Total Medium Priority Restoration Treatment Costs:					\$72,745.34
Total Restoration Treatment Cost:		\$73,945.34			

Treatment Type: Stabilization

Priority	Feature Name	Treatment Description	Quantity	Unit Cost	Total Cost
High	Exterior: Windows	Install temporary ventilated window closure panels	12 Ea	\$189.00	\$2,268.00
High	Roof	Apply temporary roll roofing	23 SQ	\$149.00	\$3,427.00
Total High Priority Stabilization Treatment Costs:					\$5,695.00
Total Stabilization Treatment Cost:		\$5,695.00			

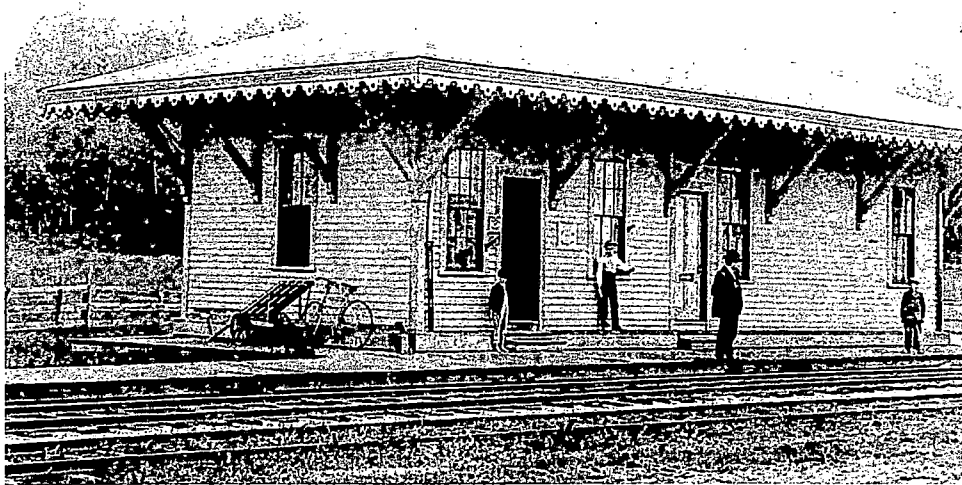
Treatment Cost Summary: B&M Railroad Depot

Total Net Cost by Structure:	\$195,409.07
General Conditions (15% Net):	\$29,311.36
Design Costs (10% Net):	\$19,540.91
Construction Contingency (15% Net):	\$29,311.36
Total Rehabilitation Cost:	\$273,572.70

Historic Structures Report

Benson's Property
Town of Hudson, New Hampshire
June 13, 2003 – 100% Submittal

B&M Railroad Depot



Historical Architect
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Amherst, NH 03031

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Executive Summary

Purpose of the Report

This Historic Structures Report (HSR) has been prepared under Contract for the Town of Hudson, New Hampshire, with assistance from the New Hampshire Land and Community Heritage Investment Program (LCHIP), grant ID: 2002-R3-06. The purpose of the report is to provide guidance for the interim stabilization/preservation and long term rehabilitation of historic structures in the former Benson's Wild Animal Park, as an element of the implementation of the 2002 Benson's Property Master Plan. Although specific functional programs have not been finalized for the remaining historic structures, the buildings individually possess substantial significance and integrity, and are structurally well suited to a broad range of compatible adaptive reuse.

This study of the B&M Railroad Depot is undertaken to develop an understanding of the history and evolution of the structure through a careful investigation of the existing physical fabric. Combined with a limited review of historical documents associated with the building, and analysis of existing conditions preservation goals for the use and maintenance of this important structure can be created and implemented.

Research Methodology

The Historic Structures Report has been developed in the format established by the National Park Service in *NPS-28: Cultural Resources Management Guideline* (1993). Substantial documentary and archival research was completed in 1992 for the New Hampshire Division of Historical Resources Inventory. Archival research for this project was limited to a review of the holdings of the New Hampshire State Library, Hudson Town Library, Hudson Historical Society, and private collections as referenced. The principal focus of the investigation was on documentation of the individual structures, site assessment of existing conditions, and interpretation of evidence of physical evolution. Research goals were as follows:

- Existing conditions assessment
- Determination of structural condition
- Analysis of structural threats and causes of deterioration
- Identification of "character-defining features"
- Stabilization plan and cost estimate
- Development of rehabilitation guidelines and cost estimate
- ADA and code compliance assessment
- Projection of long-term maintenance needs and costs

Field research was conducted November, 2002 – May, 2003 to document the structure and conduct a detailed condition analysis.

Significance

Although the structure is no longer in its original location in Hudson Center, the building is closely associated with both the history of the area, and the history and development of Benson's Wild Animal Park. The close proximity of the railroad to the Interstate Fruit Farm property was a likely influence on John T. Benson's decision to purchase the property for the Wild Animal Park. The railroad was one of the

principle means of bringing visitors as well as exotic animals to the Park in its early years, delaying the abandonment of this segment of the financially troubled Worcester, Nashua, and Portland Division of the Boston and Maine Railroad. Because the Depot has been moved from its original site, it would normally not be eligible for the National Register of Historic Places, however, the themes of rail transportation and development of the amusement park industry are closely linked in this structure, and contribute to its local and regional significance.

Integrity

The building possesses substantial integrity of form and materials. Although the interior has been heavily remodeled, the basic room layout is fundamentally intact, and many original materials and finishes remain underneath the applied wall surfaces. There is excellent photographic documentation of the historic appearance of building. A similar restored railroad station exists in Sandown, NH.

Major Issues Identified in the Scope of Work

The permanent location of the Depot needs to be finalized. The Conceptual Master Plan for the Benson's Property recommended locating the structure near the busy intersection of Route 111 and Kimball Hill Road. This recommendation has since been modified to locating the Depot near the primary parking unit off Kimball Hill Road.

A potential funding source which should be explored for rehabilitation of the B&M Railroad Depot is the Transportation Enhancement (TE) category of funding created by Congress under the Transportation Equity Act for the 21st Century (TEA-21) of 1998. The TE program is administered by individual states under guidelines set forth by Congress. Of the twelve activities eligible for TE funding, the rehabilitation of the Depot potentially qualifies under three criteria. (See Alternatives for Ultimate Treatment and Use section of this report.)

Interim Treatment Recommendations

Measures should be taken to stabilize the building in its present location pending relocation and rehabilitation of the structure on a permanent site. The most urgent need is for an effective, low maintenance roof surface to protect the building from additional deterioration until a rehabilitation program is finalized. Installation of asphalt impregnated roll roofing is recommended as a cost-effective interim solution.

Ventilated plywood closure panels should be installed in the window openings as detailed in the stabilization recommendations. The window closure panel system is designed to retard deterioration of the building by promoting ventilation, deterring vandalism, and facilitating periodic inspection of the interior. Doors should be secured with a hasp and padlock for access by authorized personnel.

Ultimate Treatment Recommendations

The Depot is structurally sound, and is well suited for use as a welcome and interpretive center for the Benson's Property. The high level of integrity of interior and exterior architectural features, as well as the excellent photographic record of the historic appearance of the building make it possible to accurately restore the building to its appearance as shown in the historic photographs, and as experienced by visitors to Benson's Wild Animal Park in the early 20th century. With appropriate modifications for accessibility under the Americans With Disabilities Act, and contemporary use, the Depot has the potential to serve as a signature architectural focus to welcome and orient visitors to Benson Park. The estimated construction

cost of \$273,572 is consistent with the Master Plan projection of \$282,750 to move and rehabilitate the building.

Because the proposed use of the building focuses on its connection to the history of Hudson and the Benson's Property, restoration of missing architectural features is recommended to return the Depot to its historic appearance as shown in the c. 1898 photographs and 1916 Valuation Record. Reconstruction of the trackside platform is recommended as a means to sensitively incorporate a ramp to the building entrance in compliance with the Americans With Disabilities Act.

The Feature Inventory and Condition Assessment completed for this report details a complete, prioritized list of stabilization, preservation, and rehabilitation work developed to return the structure to a sound, maintainable, and functional condition. Following stabilization of the Depot and relocation to a permanent site, these actions can be undertaken sequentially to support the goals that have been identified for development of the Benson's Property.

Rehabilitation Treatment Cost Summary

1. Stabilization	\$5,695
2. Preservation	\$4,470
2. Restoration	\$73,945
3. Rehabilitation	\$111,299
Total Net Cost	\$195,409
General Conditions (15%)	\$29,311
Design Costs (10% Net)	\$19,541
Construction Contingency (15% Net)	\$29,311
Total Construction Cost	\$273,572

Recommendations for Additional Research

The focus of this report is primarily on documentation and assessment of the physical condition of the building, and developing treatment recommendations. Although extensive historical and documentary research was not included in the scope of work, a concerted volunteer effort has been undertaken by Mr. Duane King of the Benson's Committee to locate documentary and archival sources pertaining to the B&M Railroad and the history of the Hudson Depot. This work has been invaluable in developing an understanding of the construction and evolution of the Depot. Any additional research that can shed light on the relationship between the railroad and the development of the Wild Animal Park would be of great value. It is also possible that additional research could locate original construction contracts and further information on construction details and finishes.

Acknowledgments

Preparation of this report would not have been possible without the support and encouragement of all of the members of the Benson's Committee, past and present, and Sean Sullivan, Director of Community Development for the Town of Hudson. Betsy Hahn of the Nashua Regional Planning Commission kept the project on track as Project Manager for the LCHIP grant, and anticipated every liaison and coordination need. Particular thanks go to Duane King of the Benson's Committee for his great knowledge and enthusiasm for railroad structures, and for locating records pertaining to the history of the Depot.

Introduction

What is a Historic Structure Report?

The purpose of a historic structure report (HSR) is to develop an understanding of a building's physical history and condition, and provide specific, useable information for implementing a treatment plan. The New Hampshire Division of Historic Resources states that, "One of the first parts of a preservation project should be a historic structure report, which analyzes the physical evolution, condition, and potential of a historic building as documented by historical and architectural and technological evidence."¹ Buildings that are important in the history of a community have the potential to continue to serve that community in many ways after their original function is no longer viable. Like all cultural and natural resources, buildings have many levels of value – functional, economic, and other values that are intangible, but no less meaningful. A historic structure report is a tool for analyzing the multiple values that a building represents in a way that balances the relationship of meaning, use, and cost to realize maximum benefit to the community.

The decision to complete an HSR is part of a broader planning process, involving consultation from many sources and interest groups, leading to the conclusion that a historic resource should be preserved. The two major concepts that an HSR uses in assessing a building are *significance* and *integrity*. *Significance* considers the building's place in history through its context and associations. Is there a documented connection with a famous person or event? Is it a rare surviving example of a particular historic building type? Is it part of a story that illustrates an important theme in the history of a place or community? *Integrity* is the degree to which the ideas and values that make a building significant can be recognized in, and identified with its existing physical form, construction, and materials.

Documentation of a historic structure includes identifying the visual aspects and physical features that contribute to its distinctive architectural character. These *character-defining features* (CDFs) include the overall shape of the building, its materials, craftsmanship, decorative details, and interior spaces and features, as well as site and landscape elements. Character-defining features are those aspects of a building that define its particular aesthetic quality, and without which its architectural or historical integrity would be diminished or lost.

Finally, an HSR assesses the *condition* of the building to determine the extent and causes of deterioration and structural problems, and develop recommendations and cost estimates for treatment and future reuse. Resources available for the preservation of historic structures are typically extremely limited. Preservation is focused on means of finding compatible uses in the long term, and minimizing the loss of historic character in the short term.

Preservation Standards and Guidelines

Federal and state agencies use the *Secretary of the Interior's Standards for Treatment of Historic Properties* as the benchmark for reviewing proposed treatment of a historic structure (see Appendix I). The standards recognize four potential treatments for historic structures – preservation, restoration, rehabilitation, and reconstruction.

- *Preservation* focuses on the maintenance and repair of existing historic materials and retention of a property's form as it has evolved over time. (Protection and Stabilization have now been consolidated under this treatment.)

¹"Alterations, Additions and Architects (Historic Resource Information)". New Hampshire Land and Community Heritage Investment Program website. Accessed November 27, 2002.
<<http://www.lchip.org/Alterations.%20Additions.%20&%20Architects.htm>>

- *Rehabilitation* acknowledges the need to alter or add to a historic property to meet continuing or changing uses while retaining the property's historic character.
- *Restoration* depicts a property at a particular period of time in its history, while removing evidence of other periods.
- *Reconstruction* re-creates vanished or non-surviving portions of a property for interpretive purposes.

Rehabilitation is by far the most common treatment for structures that will be used for contemporary purposes. It is defined as "*the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values*".²

Although rehabilitation has been identified as the ultimate treatment for the Benson's historic structures, interim measures will be required to maintain them without additional loss of historic integrity until long term uses have been identified, and funding is available for rehabilitation. Stabilization consists of measures to slow or stop the process of deterioration by reestablishing a weather resistant enclosure, and providing temporary, reversible means of structural shoring or support where necessary.

The deed conveying the Benson's property to the Town of Hudson includes a preservation restriction on the historic property. The preservation restrictions applied to the buildings and their settings require that, where possible, repair, replacement, alterations and additions should be made "in-kind", with forms, design, materials, and workmanship that match or complement and are compatible with the historic forms, design, and materials.



Figure 1. B&M Railroad Depot, New Hampshire Division of Historical Resources Inventory photograph, March 1992.

² Kay D. Weeks and Anne E. Grimmer, *The Secretary of the Interior's Standards for the Treatment of Historic Properties, with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* (Washington, DC: U.S. Department of the Interior, National Park Service, Cultural Resources Stewardship and Partnerships, Historic Preservation Services, 1995), p. 61.

Part 1: Development and Use

Historical Background and Context

Boston & Maine Railroad

Between 1835 and 1873, a number of small regional railroads developed to form a rail system connecting Boston and Portland, Maine. The Hudson Center Passenger Station of the B&M Railroad was constructed in 1873 on Greeley Street, as part of the Nashua & Rochester Railroad which was chartered June 24, 1868, and opened in November 24, 1874. Beginning in 1882, the Boston and Maine Railroad gradually consolidated these small regional systems through construction, merger, and lease, becoming the dominant railroad of central New England by 1900. The B&M network of tracks linked Boston with points in Massachusetts, Maine, New Hampshire, and Vermont, and eastern New York.³

The Worcester, Nashua, and Portland line of the B&M Railroad ran from Worcester to Nashua (through Ayer and Hollis). From Nashua it passed through Hudson, Windham, Derry, Hampstead, Sandown, Fremont, Epping, Lee, Barrington, West Gonic, Rochester, and East Rochester, before continuing to South Lebanon and Portland, Maine.⁴

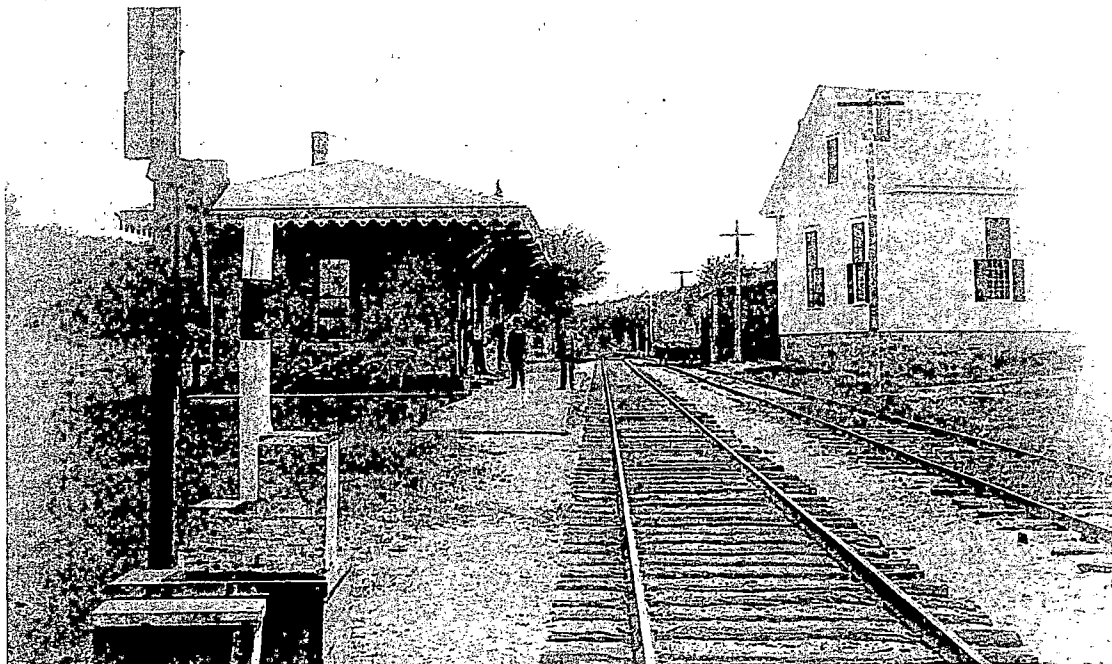


Figure 2. B&M Railroad Depot in Hudson Center, c.1898. Collection of the Hudson Historical Society.

³ Rick Nowell, *Capsule History of the Boston and Maine Railroad*, Boston and Maine Railroad Historical Society website. Accessed May 12, 2002. <http://www.trainweb.org/bmrrhs/history.html>
<http://www.trainweb.org/bmrrhs/history.html>

⁴ Charles A. Hazlett, *History of Rockingham County, New Hampshire and Representative Citizens*, Richmond-Arnold Publishing Co., Chicago, Ill., 1915, p. 85. USGenWeb Archives website. Accessed May 12, 2003. <http://ftp.rootsweb.com/pub/usgenweb/nh/rockingham/history/rockinghamco/chapter06.txt>

Although much of the B&M service declined after 1934, John T. Benson was able to keep the Nashua to Hudson rail line operational as an excursion line until 1942, transporting visitors from throughout the region, until the Wild Animal Park was forced to close for the duration of World War II.

Interstate Fruit Farm: 1910-1924

The area comprising the present 168-acre Benson's Property lies to the southeast of Hudson Center, bounded by Route 111, Kimball Road, Bush Hill Road, and Falling Rock Road. Census records indicate that the property was divided into several farms during the second half of the 19th century, producing corn, oats, peas, beans, potatoes, apples, butter, wood, and hay.

Between 1910 and 1911, these farms were consolidated through purchase by the Interstate Hotel Corporation of Lexington, Massachusetts, which operated the property as the Interstate Fruit Farm. One unsuccessful aspect of the Interstate Fruit Farm tenure was the operation of a "health farm" for retired circus performers and animal trainers. In 1915, John T. Benson, President of the Interstate Hotel Corporation was appointed Manager of the Interstate Fruit Farm.

Benson's reputation as an animal trainer, adventurer, zoo curator, and entrepreneur was by this time firmly established. Born the son of a menagerie owner in Dewsbury, Yorkshire, England in 1871, Benson immigrated to the United States in the 1890s, where he quickly achieved recognition for importing wild animals from India, Africa, and Thailand for exhibit in zoos and circuses around the country. As a wild animal scout Benson is credited with capturing the first gorilla to be exhibited in captivity for the Ringling Brothers Circus. He participated in the development of a number of zoos including the Franklin Park Zoo in Boston where he served as curator. In 1914, Benson became the United States Manager for the world's largest wild animal training organization, Hagenbeck of Germany, importing exotic animals to a shipping depot in Hoboken, New Jersey, for sale to zoos and circuses. It is not known whether the Interstate Fruit Farm initially served as a staging area for the Hagenbeck organization during Benson's tenure as Manager, or whether this figured in the operation of the "health farm".

Benson's Wild Animal Farm: 1924-1943

In 1924, Benson purchased the Hudson property outright and renamed it Benson's Wild Animal Farm, using it as a quarantine station, training venue, and shipping base for animals imported from Hagenbeck in Germany. By 1926, use of the Hoboken, New Jersey terminal was discontinued, and animals were transported by rail from the port of Boston to the Railroad Station in Hudson Center, a short distance from the Benson's property. In *Remembering Benson's Wild Animal Farm*, author Robert J. Goldsack describes the effect of the new arrivals:

Nearby farmers and residents soon became quite curious as trucks loaded with strange creatures started to arrive and nonfarm animals were paraded along the road after unloading from freight cars at the Hudson station. People out for Sunday drives would pause outside the farm and peer in with hopes of seeing some of the unusual creatures. Some even gathered up enough nerve to seek out someone on the property to ask if they could look around.⁵

Benson lived in the c.1880 farmhouse on the property (NHDHR Inventory #28.A). Two large existing barns, the "John T. Benson Barn" associated with the farmhouse (NHDHR Inventory #28.B) and the Haselton Barn (NHDHR Inventory #28.HH) were available to house animals to which those accommodations were suited. The Elephant House (NHDHR Inventory #28.D) was probably one of the earliest Benson's era structures, necessitated by the particular requirements of its inhabitants. Other pens, runs, and enclosures were undoubtedly constructed as needed. Another early Benson's structure was the rustic Office (NHDHR Inventory #28.C2). While Benson developed the infrastructure of the Wild Animal

⁵ Robert J. Goldsack. *Remembering Benson's Wild Animal Farm, Nashua, New Hampshire, 1927-1987*. Midway Museum Productions. Nashua, NH. 1998, p. 11.

Park, he also assembled a cadre of animal trainers including: lion trainer, Joseph Arcaris; elephant trainer Carl Neuffer; horse trainer, Fred Pitkin; and chimpanzee trainer, George Marshall.

In 1927, Benson's Wild Animal Farm opened to the public for a small admission fee. Until his death in 1943, John T. Benson developed the property into a renowned regional attraction celebrated as "the strangest farm on earth". Adopting the model pioneered by his business associate Carl Hagenbeck, with the creation of an "animal park" near Hamburg, Germany in 1907, Benson created a setting where exotic animals appeared in a naturalistic landscape. Financed largely by Benson's success as an animal merchant, the facilities were constantly expanded during the 1930s. Attractions included: enclosures for the largest collection of monkeys ever exhibited at one time; bear and lion cages; gorilla house; pony and zebra houses; sea lion pool and shelter; snake and reptile exhibits; and caged enclosures for exotic birds. The grounds were extensively landscaped, and featured picturesque paths, water features, and rustic bridges. Regular performances displayed trained tigers, lions, ponies, dogs, seals, and elephants. Rides on Betsey, the famous elephant were among the most popular of all the attractions at Benson's. In between animal acts, visitors enjoyed miniature golf, horse-shoes, lawn bowling, shuffleboard, and children's rides. Concession areas including a Bavarian style café and beer garden offered food and drink.

For many visitors to the Park, the train ride to Hudson Center was a central part of the Benson's experience. Robert J. Goldsack describes the scene during the 1930s:

On Sunday mornings, the "Jungle Train" an excursion train operated by the Boston & Maine Railroad would roar into Hudson bearing thousands of eager children and their parents. The train departed North Station and arrive at the Hudson station located on Greeley Street across from the farm and behind the Hudson Baptist Church. A combination ticket covered both the train ride and admission as the farm billed the railroad for the price of each ticket.

Ever the showman, Benson would arrange for a worker, dressed in a white robe and turban, to welcome the arrivals from atop a camel. Exactly at 4:00pm, the train's whistle would pierce the air warning the crowd that departure time was exactly on half-hour away for the return trip to "Beantown".⁶

Lapham Era: 1944-1976

Following Benson's death, the Wild Animal Farm was sold in 1944 to a Boston investment group headed by Raymond W. Lapham. The Farm was closed during World War II. When it reopened in 1945, Benson's practice of selling animals to other zoos and circuses was discontinued. Under Lapham's management the number of animal species increased, and the Farm began to operate more along the lines of a traditional zoo operation. Additional amusement rides were also added. During the 1950s, Benson's was one of New Hampshire's top attractions, second only to Rockingham Race Track, with approximately 500,000 visitors annually. Raymond Lapham died in 1976, and Benson's was put up for sale again.

Provencher Period: 1979-1987

Arthur P. Provencher, a Nashua businessman, purchased the property in 1979, and began the process of expanding the operation to include additional amusement rides, as well as a petting zoo, and changes in the animal habitat areas. In 1980, 125 different species were exhibited at Benson's for a total of more than 400 animals. By 1982, the number of animals increased to nearly 800. Benson's employed approximately 250 summer workers, many of them high school students from Hudson and surrounding towns. When Circus World, an expanded amusement ride area opened in 1982, up to 10,000 people visited the park daily. In 1981, Provencher acquired the Hudson Railroad Depot and moved it from its Greeley Street location in Hudson Center to the Park, where it was remodeled as a residence.

⁶ Goldsack, p 19.

Despite its continuing popularity, Benson's Wild Animal Park filed for reorganization under federal bankruptcy statutes in 1985. The Park operated on a scaled-down basis until 1987, when it closed to the public. The animals were sold to zoos and other federally sanctioned destinations. All of the amusement rides, fixtures, and memorabilia, along with many of the post-1950 landscape features were sold and removed.

New Hampshire Department of Transportation: 1992-2002

In 1992, the New Hampshire Department of Transportation (NHDOT) acquired the Benson's property for the purpose of creating a wetland mitigation site for wetland impacts caused by construction of the Nashua Circumferential Highway. The proposed mitigation activity consists of restoration and/or construction of up to 44-acres of wetlands on the Benson's site. The Department of Transportation took steps to stabilize some of the historic structures, and provide security fencing. In November 1992, an intensive historic structures survey was completed for the New Hampshire Division of Historic Resources (NHDHR) by Lynne Emerson Monroe of the Preservation Company, Kensington, NH. All existing structures were field checked, documented and a NHDHR Inventory Form was completed. Based on this survey NHDHR determined the Benson's property to be eligible as a district for the National Register of Historic Places with 25 contributing structures.

To be eligible for the National Register, structures or districts must be found to have significance under one or more of the following criteria.

- A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. That are associated with the lives of persons significant in our past; or
- C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. That have yielded or may be likely to yield, information important in prehistory or history.⁷

The Benson's property was determined eligible as a district under Criteria A, B, and C, "for the information it conveys about the growing importance and evolution of naturalistic animal facilities/zoos in the early half of the 20th century, for its association with John T. Benson, an animal trainer and showman of national, if not world-wide significance, and as a rare surviving collection of structures typifying modest zoos in the first half of the 20th century."⁸ The Division of Historic Resources identified the principal period of significance as 1924-1947, the date of John T. Benson's ownership of the property. The Interstate Fruit Farm period, 1910-1924, was noted as a secondary period of significance.⁹

In 1997, the Benson's site was reviewed again by NHDHR, and found to be no longer eligible as a district for the National Register due to loss of integrity through physical decay, vandalism, and evidence of post-1947 alterations to contributing structures.¹⁰ Removal of 16 structures and several animal pens was approved by NHDHR, and completed by the Department of Transportation. Additional architectural documentation was completed on the remaining structures by the Cultural Resource Group of Louis Berger and Associates, Inc. in 1998. Photographs and site sketches were completed by Richard M. Casella, Senior

⁷ "How to Apply the National Register Criteria for Evaluation". U.S. Department of the Interior, National Register website. Accessed January 20, 2003. <http://www.cr.nps.gov/nr/publications/bulletins/nrb15/nrb15_2.htm>

⁸ New Hampshire Division of Historical Resources – Area Form, A-28. Benson's Wild Animal Farm, Hudson, NH. November, 1992. Sheet 13 of 77.

⁹ NHDHR Determination of Eligibility (DOE), with annotations. January 6, 1993. NHDHR files.

¹⁰ Nancy C. Muller, Director, NH State Historic Preservation Officer to William Hauser, Bureau of Environment, NH Department of Transportation. October 17, 1997. Correspondence, NHDHR files.

Architectural Description

Design

Much of the original form, details, and finishes of the Depot are intact, or can be read from the architectural evidence. In addition, the building is remarkably well documented. A set of high quality photographic prints, c.1898, in the collection of the Hudson Historical Society, show the three principle exterior elevations. There is also a detailed record of the construction, layout, and condition of the building with sketches and photographs in the Interstate Commerce Commission Valuation Record for the B&M Railroad, dated June 14, 1916, obtained by Duane King of the Benson's Committee, from the Boston & Maine Railroad Historical Society Archives in Lowell, Massachusetts. This physical and documentary evidence makes it possible to develop a thorough understanding of the historic appearance of the structure.

The B&M Railroad Depot is a rectangular wood-framed structure measuring 50'-7" by 20'-0". The design is functional and utilitarian, similar to that of many small passenger and freight stations of the period. The most striking architectural features are the straight brackets which carry the wide overhang of the hipped roof, and the decorative eave boards which historically adorned the cornice. The 6'-6" roof overhang sheltered passengers from the weather, while the original slate roof provided some measure of fire protection against sparks from the locomotive engines. The stepped round, and half round profile of the eave boards, pierced with regularly spaced circular openings, created a distinctive pattern of light and dark against the shadows of the deep roof overhang.

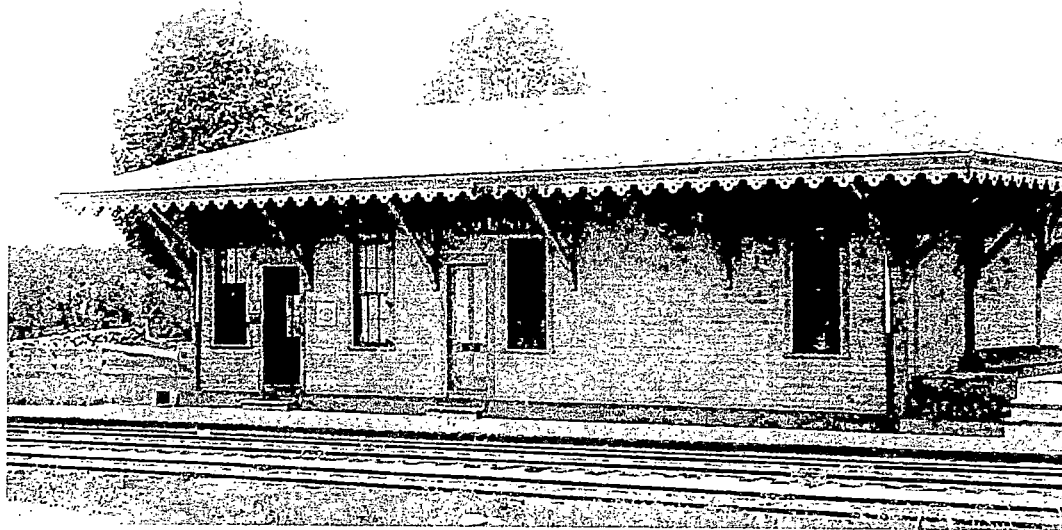


Figure 4. B&M Railroad Depot, c. 1898. Note Freight Room door and platform at right. Collection of the Hudson Historical Society.

Structure

The original foundations, which are no longer extant, were noted in the 1916 Valuation Record as 10"x 10" granite blocks in 10 foot lengths. The building is constructed in a transitional form of the balloon frame, meaning that the frame is constructed predominantly of sawn 2x framing members running continuously from the foundation sill plate to the roof plate. The wall framing is composed mostly of 2"x 4" studs on

24" centers. In this instance however, intermediate 4"x 8" vertical posts are placed in line with the stud walls at the roof bracket locations to help support the heavy load of the projected roof overhang. The wall and corner posts are mortise and tenoned into the sill and roof plates, and secured with wooden pegs, as in a timber frame building. The 2"x 4" studs are tenoned into blind mortises in the plates (i.e., the tenons do not extend completely through the plates).

Riband boards let into the wall posts and studs carry the 2"x 7" ceiling joists which are spaced at approximately 2'-0" on center, and also serve to brace the frame.¹¹ On the long walls, the ceiling joists are seated in shallow notches on the ribband boards, and continue past the rafter plate line to lap the rafter ends, making a nailing surface for the tongue & groove soffit boards on the underside of the roof overhang.¹² On the short walls, the 2"x 4" studs are notched to receive a 4"x 7" transverse plate which stabilizes the end walls, in line with the ceiling joists. Cripples of 2"x 7" stock nailed to the studs and rafter ends provide a nailing surface for the soffit boards on the underside of the roof overhang.

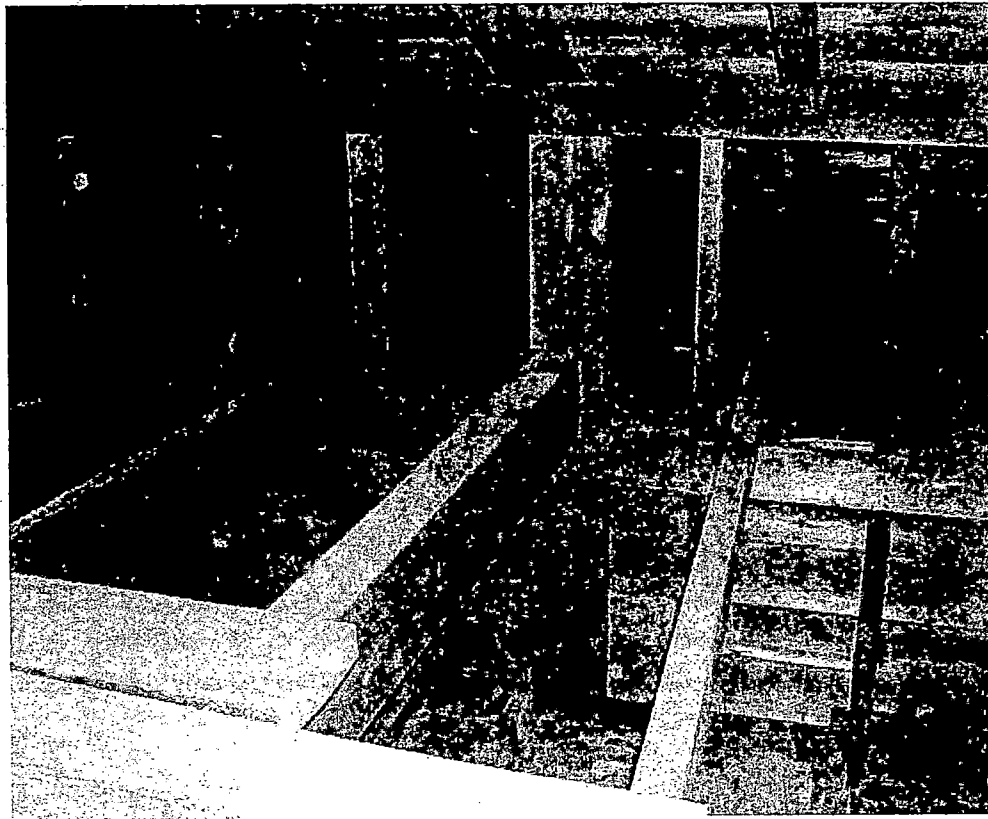


Figure 5. Wall framing on (site) east elevation above Freight Room, showing stud wall with intermediate post, ribband board, and soffit at roof overhang. Photograph by Lisa Sasser (May, 2003)

¹¹ A ribband or ribbon board is a ledger board let into the inside face of studs to support floor or ceiling joists, typically found in balloon framing.

¹² A soffit is the flat underside of a roof eave or overhang.

Roof

The hipped roof is framed with 2"x 7" rafters nailed into a 2x ridge board. The roof is sloped at a 5:12 pitch and sheathed with 1" boards, which originally carried a slate roof. Analysis of the historic photographs shows that the slate roof consisted of 22 courses at 9-1/2" exposure. The building was constructed with boxed gutters and four leaders at each corner to conduct rainwater away from the foundation. The decorated eave board and ogee profile wood cornice completed the roof trim. A single, brick chimney projected approximately twelve courses above the roof line, with an additional three courses of brick making up a slightly projected chimney cap.



Figure 6. Roof framing system. Note water damage at chimney. Photograph by Lisa Sasser (May, 2003)

Exterior

The exterior walls are sheathed with beveled clapboard siding. The structure originally had eight large 6/6 double hung wood windows, with plain exterior casings. There were originally only two exterior doors, of 4-panel construction, facing the railroad platform. An 8-foot wide freight door is shown on the Valuation Record drawings, and also appears in one of the historic photographs. The Freight Room floor level is 18" above the finished floor level in the adjacent Waiting Room, and is reached on the exterior by a raised platform with three steps. There is a board step and skirting around the entire structure, covering the granite foundation.

There is an evident change in the configuration of the platform from the c.1898 photographs to the two photographs accompanying the 1916 Valuation Record. The earlier photographs clearly show a wood

platform on the trackside elevation, extending around the short ends of the building. In the two photographs accompanying the 1916 Valuation Record, this platform appears to have been removed, and the accompanying site sketch shows a gravel walkway at trackside, with only a 12-foot wide platform at the Freight Room end. It is possible that deterioration of the wood platform lead to its removal post-1898.

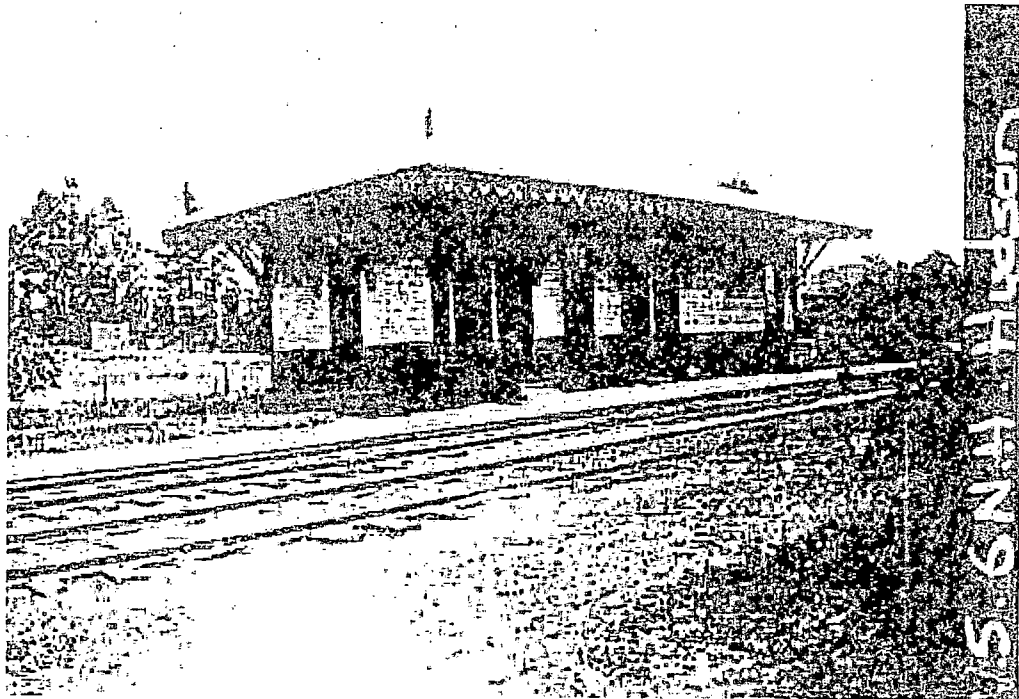


Figure 7. June 4, 1916, photograph of the B&M Railroad Depot from Interstate Commerce Commission Valuation Record, Book 6 NH. Collection of the Boston & Maine Railroad Historical Society, Lowell, MA. Courtesy Duane King.

Another difference evident in the 1898 and 1916 photographs is the change in exterior paint colors. In 1898, the exterior walls are painted entirely in a light color which shows on the original clapboards as a yellow/cream. The windows, roof brackets, door frames are painted in a slightly darker color. The 1916 Valuation Record photographs show a darker trim color, and a band of the same color surrounding the building at the level of the window sills. A paint analysis performed by an Architectural Conservator may be used to determine the historic colors and sequence.

Interior

The interior was divided in a finished section used for passenger waiting areas and office space, and an unfinished Freight Room of approximately 350 SF. The Freight Room floor level is 18" higher than the floor in the remainder of the building. The finished areas of the building included two Waiting Rooms, one with an area of 222 SF and a smaller 185 SF Waiting Room in the middle of the building. Each Waiting Room was accessed by a single door on the track side elevation. These rooms were separated by the Agents Office and Store Room. A small Tool Room was accessed from the middle Waiting Room.

The Waiting Room and Office spaces featured a 45" high beaded tongue-and-groove board wainscot topped with a chair rail. Wide trim mouldings surrounded the doors and windows. Above the chair rail, walls and ceiling were finished with plaster on sawn wood lath.

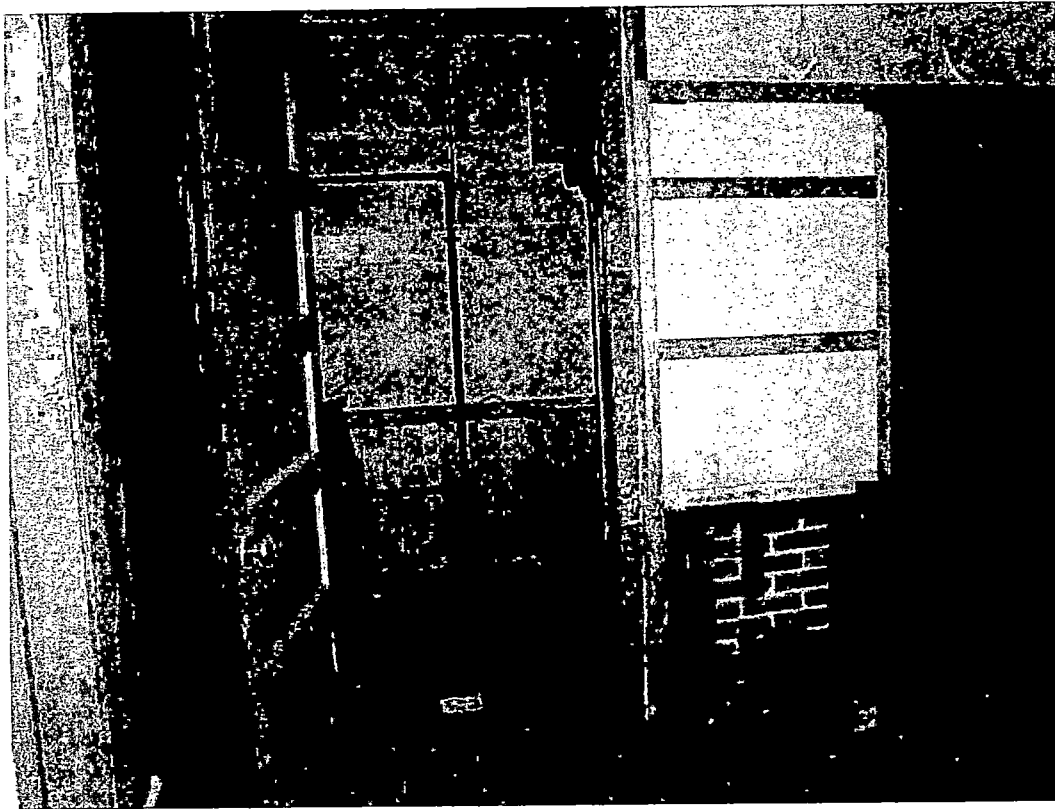


Figure 8. Original interior finishes including plaster on sawn wood lath, beaded tongue & groove wainscot, and chair rail are visible in this view of the Waiting Room and Store Room. Photograph by Lisa Sasser. (November, 2002)

Existing Conditions

The Depot was moved to its present temporary location within the fenced area east of the Office and Kitchen several years ago to provide additional security against vandalism and arson. Pending a future move, the structure remains braced above ground on timber cribbing and two steel needle beams. This is a good interim solution until a final location for the structure is determined. Keeping the building above grade allows good ventilation around the base of the structure, and prevents moisture build-up and decay of the sills and floor framing.

A detailed analysis of the individual elements of the building, their evolution, and existing condition is contained in the Feature Inventory and Condition Assessment appended to this report. Recommended treatments fall into two basic categories:

- Measures to stabilize and preserve the building prior to moving it to a permanent location.
- Ultimate restoration and rehabilitation recommendations.

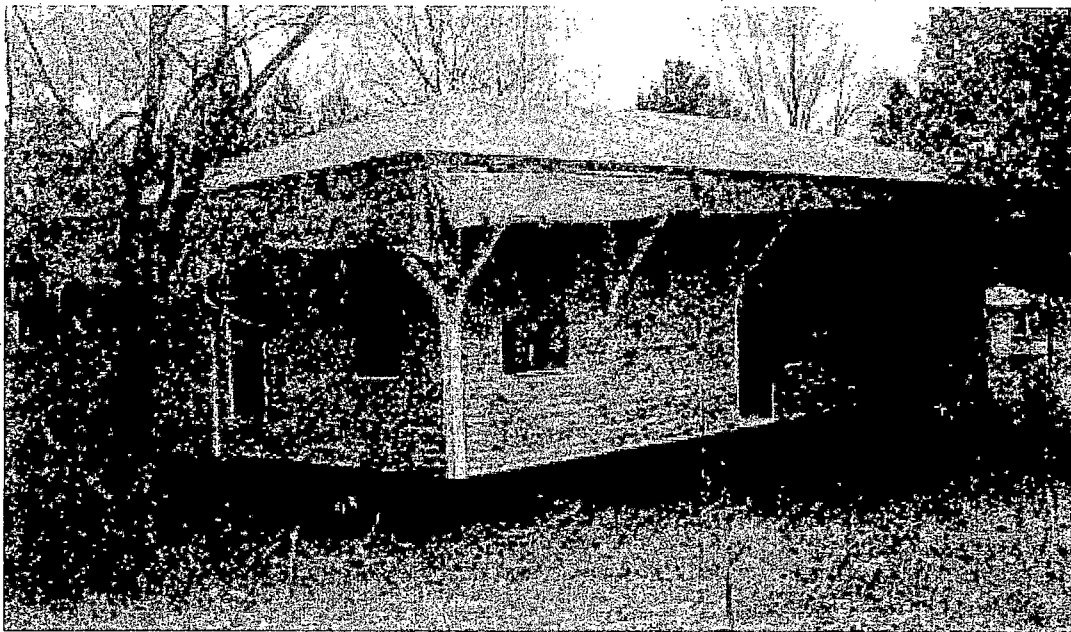


Figure 9. Existing condition of B&M Railroad Depot. Photograph by Lisa Sasser. (April, 2003)

Part 2: Treatment and Use

Character-Defining Features and Recommendations

Introduction

The proposed treatment for the Depot is rehabilitation. The Secretary of Interior's Standards for the Treatment of Historic Properties define rehabilitation as:

... the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.¹³

The "portions or features" to be preserved are known as character-defining features (CDFs), elements of a building which responsible for the particular visual and aesthetic qualities that cause a structure to be valued as a historic resource. CDFs may be architectural features and details, materials, craftsmanship, surface finishes, interior spaces, or architectural context.

Many of the Secretary of the Interior's Standards for Rehabilitation specifically address the retention of character-defining features.¹⁴ These include the following:

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.
2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.
4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.
5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.
7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.
9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

A primary goal of an HSR is to define a building's CDFs to insure that they are protected from alteration or demolition during the rehabilitation process. CDFs may also be missing or removed elements that were important to the historical character of a structure. The Secretary of Interior's guidelines states that:

¹³ Kay D. Weeks and Anne E. Grimmer, *The Secretary of the Interior's Standards for the Treatment of Historic Properties, with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* (Washington, DC: U.S. Department of the Interior, National Park Service, Cultural Resources Stewardship and Partnerships, Historic Preservation Services, 1995), p. 61.

¹⁴ Weeks and Grimmer, p. 62.

“... where an important architectural feature is missing, its replacement is always recommended ... if adequate historical, pictorial, and physical documentation exists so that the feature may be accurately reproduced.”¹⁵

Exterior Elements

- Design characteristics of railroad Depots of the second half of the 19th century, including hipped roof with broad overhang, roof brackets, and decorative eave boards and cornice.
- Fenestration including tall, narrow 6/6 double-hung windows with plain casings, four-panel doors, and large Freight Room door.
- Wood platform and board skirting at the base of the structure.
- Exterior finish materials including slate roof and beveled clapboard siding.

Interior Elements

- Interior arrangement of partition walls and floor levels to delineate functional areas of the building.
- Interior wood trim including beaded wainscot, chair rail, and window and door casings.
- Interior finish materials including wood floor, and plaster walls and ceilings.

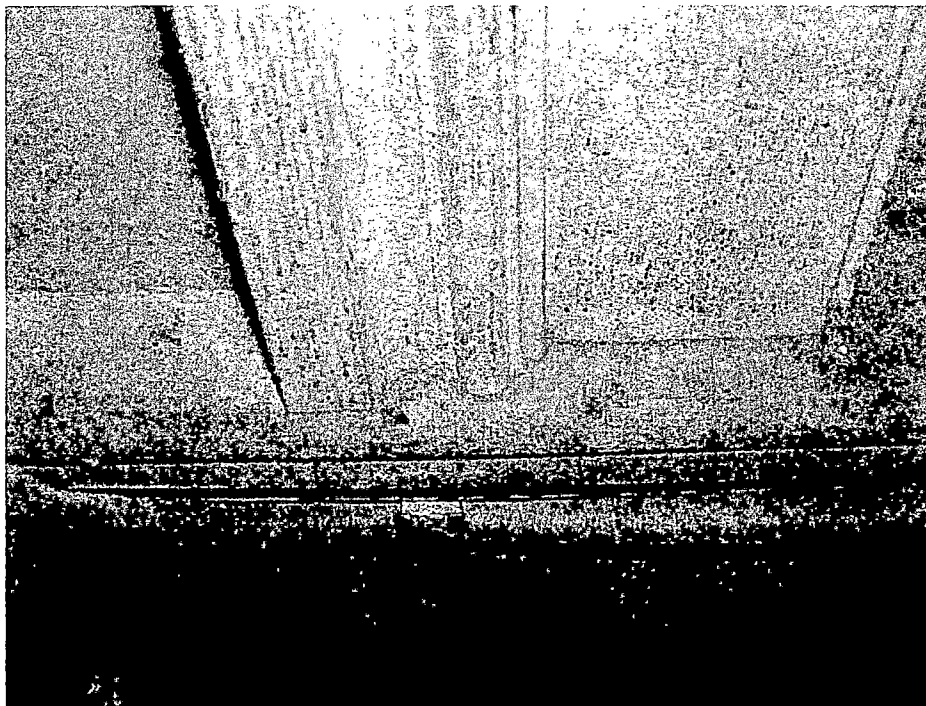


Figure 10. Detail of original window frame and chair rail in Store Room. Photograph by Lisa Sasser. (November, 2002)

¹⁵ Weeks and Grimmer, p. 65.

Interim Treatment and Use: Stabilization

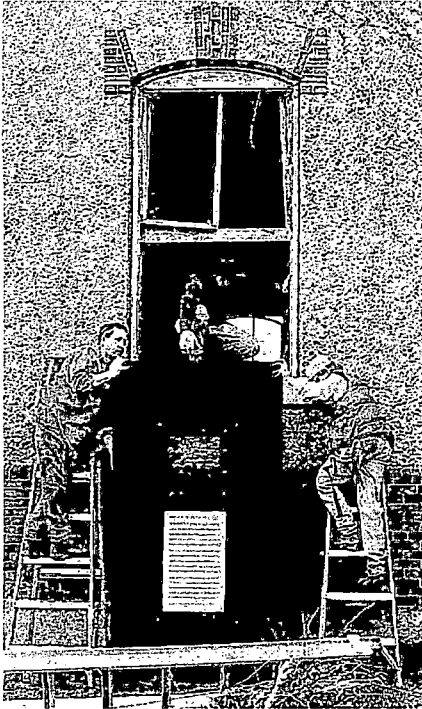


Figure 11. Volunteers installing window panels on hospital building at Ellis Island.

Immediate measures should be taken to stabilize the building in its present location for a period of 3-5 years pending relocation and rehabilitation of the structure on a permanent site. The most urgent need is for an effective, low maintenance roof surface to protect the building from additional deterioration until a rehabilitation program is finalized. Installation of 90 pound asphalt impregnated roll roofing over the existing asphalt shingle roof is recommended as a cost-effective interim solution.

Ventilated plywood closure panels such as the one shown the photograph, should constructed using 1/2" CDX plywood with 12" square lexan vision panels and prefabricated louvered ventilation screens. Bring the upper and lower sash of the double hung unit to the mid-point of the opening and install pre-cut plywood panels using long carriage bolts anchored into horizontal wooden bracing, or strong backs, on the inside face of the window. Do not screw or nail panels into window sash or casings. Paint the exterior of the plywood panels to retard de-lamination of the plywood. See Preservation Brief #31: Mothballing Historic Buildings for additional guidance and recommendations. <http://www2.cr.nps.gov/tps/briefs/brief31.htm>

The window closure panel system is designed to retard deterioration of the building by promoting ventilation, deterring vandalism, and facilitating periodic inspection of the interior. It also provides a visual indication that the building is protected and valued by the community. With proper planning and direction, stabilization work can be completed by a well-organized volunteer effort. Doors should be secured with a hasp and padlock for access by authorized personnel.

Priority Stabilization Recommendations: Cost Summary

Install ventilated window closure panels	\$2,268.00
Roll roofing	\$3,427.00

Total Stabilization Cost \$5,696.00

Alternatives for Ultimate Treatment and Use

The 2002 Benson's Property Master Plan by Vanesse Hangen Brustlin Inc. (VHB) covers the proposed development of the entire 168-acre Benson's Property as a passive recreation area and local/regional park in a manner compatible with the NHDOT wetland mitigation plan. The Master Plan summarized the development program for the site as follows:

Proposed plan improvements are generally geared toward creating a pastoral park setting, with restoration of contributing historic structures, redevelopment of open field areas into multi-purpose play areas, building a system of trails that accommodates a variety of non-motorized activities, provision for vehicle access and parking for approximately 250 cars, development of new structures

for picnicking, restrooms/concessions, an amphitheater with seating for approximately 500 people, and a warming house for winter ice skating and cross country skiing.¹⁶

The Master Plan emphasizes that identifying and implementing a successful reuse proposal for the remaining historic structures is “key to the long term success of the master plan”.¹⁷ The main limitation on reuse of the historic structures is a site-wide prohibition on commercial activity under the Memorandum of Agreement between NHDOT and the Town of Hudson. Another issue addressed by the VHB Report is need for the Town of Hudson to establish an adequately staffed and equipped Parks and Recreation Department to manage and maintain the Benson’s grounds and buildings.

Based on the Benson’s Property Master Plan completed by VHB in March 2002, the Benson’s Committee identified 16 Management Units and associated management categories for development of the site. The Depot falls within the 5.3-acre Primary Parking Management Unit. This area will be developed to provide parking for 140 cars adjacent to Kimball Hill Road. The parking area will serve as the main access point for Benson Park, and is situated close to the Historic Benson’s Unit where the Office and Kitchen are located. The plan also calls for reconstruction of the Red Barn, and construction of an amphitheater.

The Master Plan and the Benson Park Management Site Unit Descriptions have identified the following proposed uses for the Depot:

- Renovate the Depot to accommodate an office and visitor information desk.
- Construct interpretive displays on local history and Benson’s Wild Animal Park.
- Accommodate sales of Park related items by a non-profit organization.

The Depot is well suited to the identified uses. The building has approximately 1,000 SF of interior space which could easily accommodate an office and information desk as well as a sales area, and interpretive displays. The interior room layout satisfies all the criteria for the proposed uses without major changes to the historic room layout. There is good potential for making the building ADA accessible without major impacts to its historical integrity. The one story, wood frame construction can be easily retrofit to install new utilities and services such as electrical wiring, plumbing, and heating without substantial damage to existing interior features and finishes. Structurally, the building is in good condition overall. If interim stabilization work is performed, the building can be maintained in its present condition without major deterioration for a period of 3-5 years.

The recommended treatment for the structure is rehabilitation. Rehabilitation includes provisions to alter the building for compatible contemporary uses, while preserving those features which convey its historical, cultural, and architectural values. Because the proposed use of the building focuses on its connection to the history of Hudson and the Benson’s Property, some restoration of missing architectural features is recommended to return it to its historic appearance as shown in the c.1898 photographs and 1916 Valuation Record. While there are minor discrepancies between the two periods of documentation, there appear to have been no other major changes to the building until it was remodeled as a residence in the 1980s. This treatment approach is consistent with the Secretary of Interior’s Standards, which support replacement of missing architectural features where adequate documentation is available for accurate reproduction.

Specific features, such as the platform which does not appear in the 1916 photographs, can be designed to sensitively incorporate features such as a ramp in compliance with the Americans With Disabilities Act. In general, the building can be returned to its historic appearance with the following actions:

- Remove non-historic window and door openings.
- Reinststate one historic window location, and reconstruct Freight Room door.

¹⁶ *Benson’s Property Master Plan*. Vanasse Hangen Brustlin, Inc. Bedford, New Hampshire. March, 2002. p. 11.

¹⁷ *Benson’s Property Master Plan*. p. 13.

- Replace slate roof and reconstruct boxed gutters, cornice, and rain leaders.
- Repair damage to existing brick chimney, and reconstruct missing section above roof line.
- Remove non-historic interior partitions, and wall and ceiling treatments.
- Repair/replace interior trim and wall finish materials.

The Feature Inventory and Condition Assessment completed for this report details a complete, prioritized list of stabilization, preservation, and rehabilitation work developed to return the structure to a sound, maintainable, and functional condition. Following stabilization of the Depot and relocation to a permanent site, these actions can be undertaken sequentially to support the goals that have been identified for development of the Benson's Property.

Rehabilitation Treatment Cost Summary

1. Stabilization	\$5,695
2. Preservation	\$4,470
2. Restoration	\$73,945
3. Rehabilitation	\$111,299
Total Net Cost	\$195,409
General Conditions (15%)	\$29,311
Design Costs (10% Net)	\$19,541
Construction Contingency (15% Net)	\$29,311
Total Construction Cost	\$273,572

A potential funding source which should be explored for rehabilitation of the B&M Railroad Depot is the Transportation Enhancement (TE) category of funding created by Congress under the Transportation Equity Act for the 21st Century (TEA-21) of 1998. The TE program is administered by individual states under guidelines set forth by Congress. Of the 12 activities eligible for TE funding, the rehabilitation of the Depot potentially qualifies under the following:

- Historic preservation – Eligible activities include preservation of buildings and facades in historic districts; restoration and reuse of historic buildings for transportation-related purposes; access improvements to historic sites and buildings.
- Rehabilitation and operation of historic transportation buildings, structures, or facilities (including historic railroad facilities and canals) – Examples of eligible activities are restoration of railroad depots, bus stations, and lighthouses; as well as rehabilitation of railroad trestles, tunnels, and bridges.
- Establishment of transportation museums – A new activity under TEA-21, may include the conversion of railroad stations or historic properties to museums with transportation themes.¹⁸

¹⁸ Dan Costello and Lisa Schamess (Ed.). *Building on the Past to Preserve the Future: A Preservationist's Guide to the Federal Transportation Enhancement Provision* (Second edition). Federal Highway Administration and National Trust for Historic Preservation. Washington, DC. 2001, p. 15.

Part 3: Technical Data

Appendix I: Secretary of the Interior's Standards for Rehabilitation

The Secretary of the Interior is responsible for establishing standards for all programs under Departmental authority and for advising Federal agencies on the preservation of historic properties listed in or eligible for listing in the National Register of Historic Places.

The Standards for Rehabilitation (codified in 36 CFR 67 for use in the Federal Historic Preservation Tax Incentives program) address the most prevalent treatment. "Rehabilitation" is defined as "the process of returning a property to a state of utility, through repair or alteration, which makes possible an efficient contemporary use while preserving those portions and features of the property which are significant to its historic, architectural, and cultural values."

Initially developed by the Secretary of the Interior to determine the appropriateness of proposed project work on registered properties within the Historic Preservation Fund grant-in-aid program, the Standards for Rehabilitation have been widely used over the years--particularly to determine if a rehabilitation qualifies as a Certified Rehabilitation for Federal tax purposes. In addition, the Standards have guided Federal agencies in carrying out their historic preservation responsibilities for properties in Federal ownership or control; and State and local officials in reviewing both Federal and nonfederal rehabilitation proposals. They have also been adopted by historic district and planning commissions across the country.

The intent of the Standards is to assist the long-term preservation of a property's significance through the preservation of historic materials and features. The Standards pertain to historic buildings of all materials, construction types, sizes, and occupancy and encompass the exterior and interior of the buildings. They also encompass related landscape features and the building's site and environment, as well as attached, adjacent, or related new construction. To be certified for Federal tax purposes, a rehabilitation project must be determined by the Secretary to be consistent with the historic character of the structure(s), and where applicable, the district in which it is located.

As stated in the definition, the treatment "rehabilitation" assumes that at least some repair or alteration of the historic building will be needed in order to provide for an efficient contemporary use; however, these repairs and alterations must not damage or destroy materials, features or finishes that are important in defining the building's historic character. For example, certain treatments – if improperly applied – may cause or accelerate physical deterioration of the historic building. This can include using improper repointing or exterior masonry cleaning techniques, or introducing insulation that damages historic fabric. In almost all of these situations, use of these materials and treatments will result in a project that does not meet the Standards. Similarly, exterior additions that duplicate the form, material, and detailing of the structure to the extent that they compromise the historic character of the structure will fail to meet the Standards.

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.
2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.
3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.
4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.

5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.
6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.
7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.
8. Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.
9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

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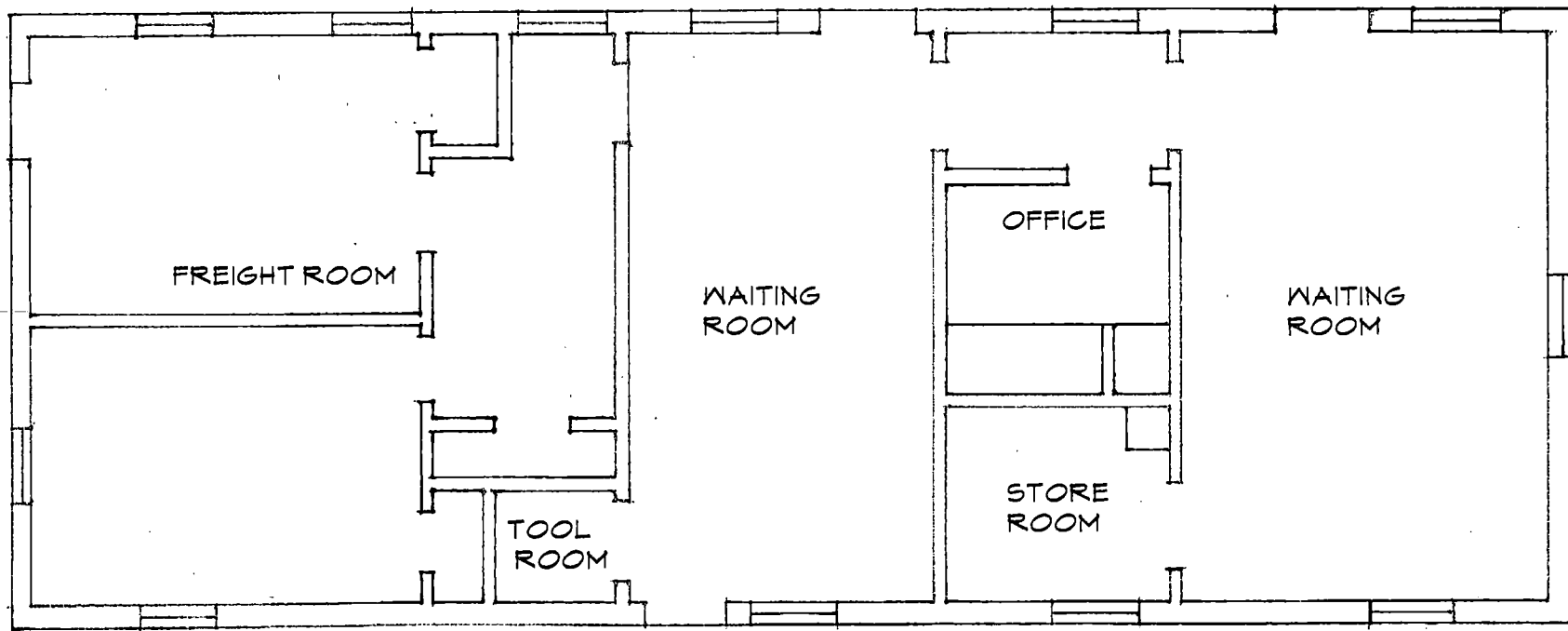
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Architectural Drawings

Floor Plan
Site East Elevation
Site West Elevation

Floor Plan



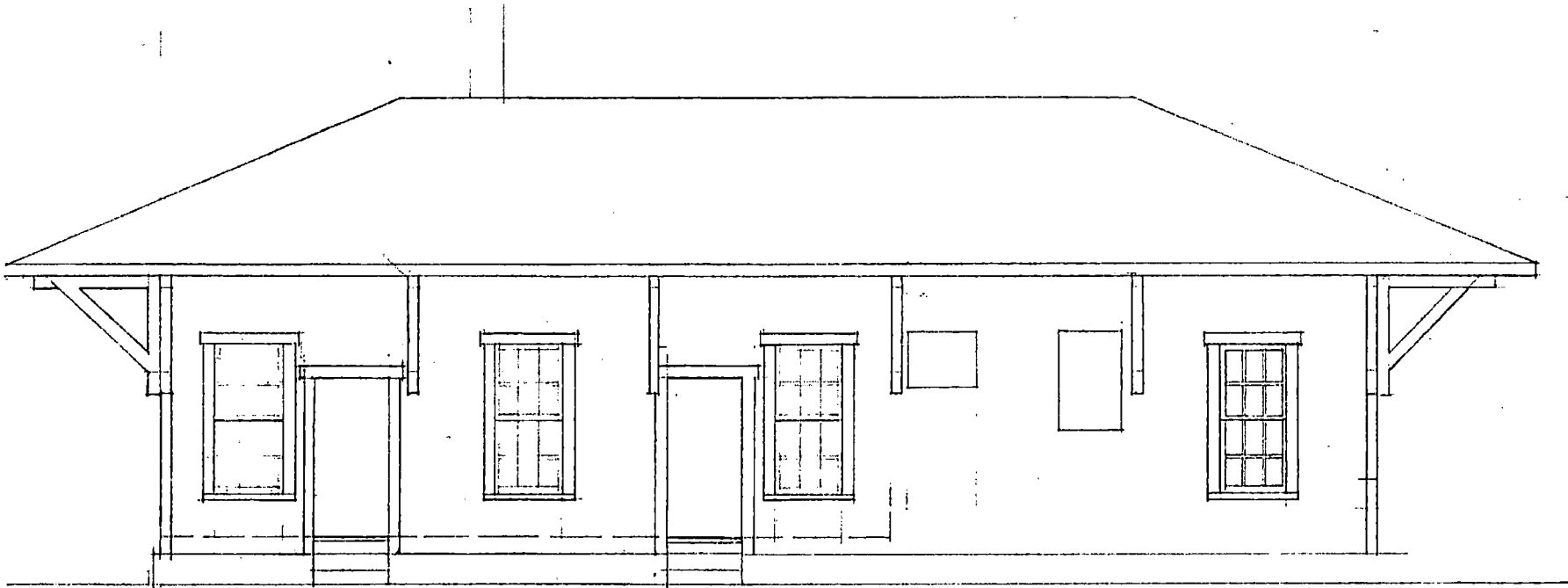
FLOOR PLAN

 HISTORIC WALL LOCATION

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to scale.



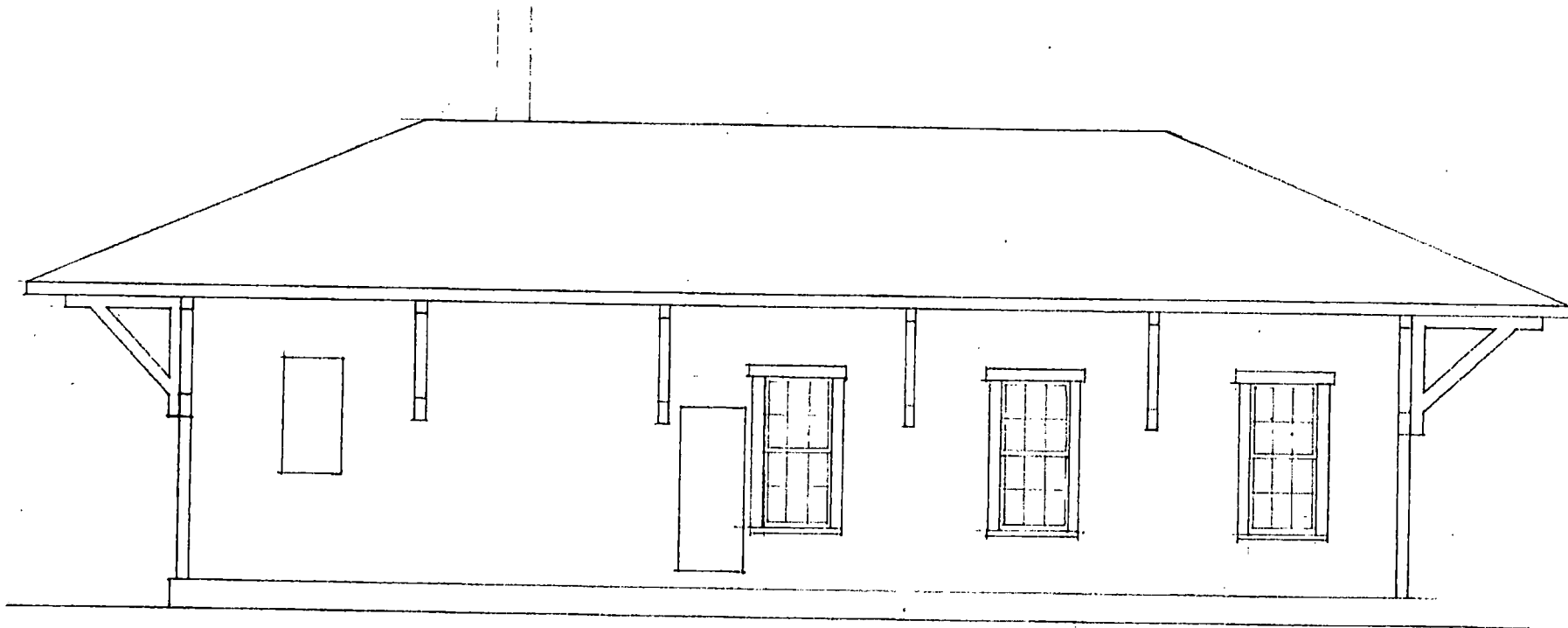
Site East Elevation



SITE EAST ELEVATION

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Site West Elevation



SITE WEST ELEVATION

NOTE: Schematic drawing for
annotation purposes, not reproduced
to scale.