

Bibliography of Assessment Reports

Summarized below are 50 years of material and condition assessments of the 1976 reconstructed fort, prepared by in-house experts and professional consultants.

Trip Report – Bent's Old Fort National Historic Site

George Thorson (historical architect), NPS Denver Service Center
November 1976 (*approx. 8 pages*)

Covers inspection of the recently completed reconstruction, documenting cracking, spalling, and erosion of exterior adobe plaster; rodent infestation of the straw above latilla ceilings; numerous roof leaks, including four requiring immediate attention; limited visitor accessibility; and functional issues with heating, intrusion alarms, fire detection, and AV systems caused largely by dirt, pests, and weather exposure. Recommends contractor and NPS staff repairs, soil and materials testing, maintenance planning, and ongoing monitoring to address emerging defects.

Mud Plaster Preservation Research at Bent's Old Fort

Dennis Fenn (research scientist), NPS Western Archeological and Conservation Center (WACC)
July 1977 (*approx. 19 pages*)

Attributes rapid erosion of exterior mud plaster and adobe to fine-textured local soils with low shear strength and high susceptibility to wind-driven rain. Concludes that local adobe mixes are inadequate and require amendment to improve cohesion and reduce erosion. Using test plots on the corral wall, evaluates 33 chemical surface treatments, finding solvent-based treatments generally more resistant. Recommends continued field monitoring and laboratory testing to identify effective amendments for long-term erosion control.

Chemical Stabilization Methods Research at Chaco Canyon and Bent's Old Fort

Dennis Fenn, John Deck, and Walter Herriman, National Park Service
John Vincent, New Mexico Arts Commission (adobe consultant)
December 1979 (*approx. 27 pages*)

Confirms and updates findings from the 1977 Bent's Old Fort mud plaster study. As part of a larger multi-site effort, evaluates 47 commercial mud-plaster amendments and applied surface treatments, recommending continued testing and evaluation.

Mud Plaster Preservation Research at Bent's Old Fort

Dennis Fenn and Elvia Niebla (scientists), NPS Western Archeological and Conservation Center
May 1981 (*approx. 32 pages*)

Provides updated test results on amended mud plasters, substrate adhesion, and applied surface treatments. Notes that spray-applied coatings may show initial promise but can fail over time, introduce new deterioration mechanisms, or compromise adhesion of later plaster layers. Recommends continued evaluation of amended mixes and careful selection of treatments to avoid long-term compatibility issues.

Analysis of Structural Condition of Bent's Fort and Recommendations for Maintenance

Anita Rodriguez, Enjarradora, Inc. (consulting contractor and adobe expert)
April 1986 (*approx. 8 pages*)

Evaluates construction methods and early deterioration, noting roof leaks, plaster failure, and widespread moisture intrusion. Identifies the hybrid cavity-wall system—multiple wythes laid without proper bonding—and the use of cement mortar and cement parapets with adobe as structurally incompatible and inherently weak. Warns that the heavy concrete upper level rests on unstable inner wythes vulnerable to water damage, creating high risk for sudden failure. Recommends immediate roof repair followed by full mud-plaster replastering using traditional methods to halt moisture penetration and begin drying of saturated walls.

Maintenance Record 1976-1989

John Feinberg, Community Services Collaborative (architectural conservator and preservation planner)
September 1989 (*approx. 93 pages*)

Compiles significant maintenance activities during the first 13 years after reconstruction, documenting existing conditions and physical alterations. Records immediate erosion of exterior mud-plaster walls and roofs, the failure of large portions of the exterior adobe wythe, and subsequent replacement with CMU and cement stucco. Notes flooding and chronic moisture infiltration affecting walls, cottonwood structural members, and interior finishes. Summarizes repeated attempts to develop durable exterior renders and viable roofing, flashing, and drainage assemblies.

Maintenance Repair Plan

Merrill Wilson and Nancy Lyons, Preservation Partnership, Denver CO (historic architects)
April 1992 (*approx. 111 pages plus attachments*)

Assesses the 1976 reconstruction as highly conjectural and concludes that its hybrid wall systems, materials, and detailing are incompatible with the local climate—causing rapid erosion, moisture intrusion, and recurring failure of renders, roofs, and drainage. Recommends improving stormwater management, phasing repairs of deteriorated wood elements, and replacing CMU and wire lath and cement stucco repairs with tested stabilized systems. Warns that inaction will accelerate deterioration and further compromise historic integrity and outlines options for wall replacement, testing, and long-term maintenance.

The Cause of Basement Flooding at Bent's Old Fort National Historic Site

Scott Woods and Lee MacDonald, Colorado State University Department of Earth Resources
August 2002 (*approx. 41 pages*)

Documents periodic basement flooding, replacement of rotted columns and bases, and concerns about long-term structural damage. Concludes that rising groundwater since the early 1980s results from reduced aquifer pumping, seepage from the Fort Lyon Canal, deep percolation of irrigation water, and aggradation of the Arkansas River leading to higher stages and greater leakage. Notes that extreme high-flow years can reverse groundwater gradients and directly flood the basement. Recommends continued monitoring and further study to assess flood risk and mitigation options.

Mud Plaster Assessment

Pat Taylor, Inc. (preservation contractor)
March 2014 (*approx. 10 pages*)

Cursory assessment of mud plaster, wall systems, woodwork, roofing, drainage, and maintenance history. Notes insufficient original wall ties between outer and inner wythes; replacement of exterior adobe with CMU; and concerns about height-to-width wall ratios, particularly at the east corral. Recommends retaining an earthen conservation engineer to address wall-system design and compatibility, including matching amended plaster to existing substrates. Provides preliminary budget estimates for repairs.

Property Condition Assessment Report

Andrew Phillips, Natural Dwelling LLC (adobe consultant)
June 2015 (*approx. 6 pages*)

Provides a cursory assessment noting moisture in lower wall sections and areas of erosion. Focuses on exterior render and recommends standardizing materials, improving render mixes and

binders, and implementing ongoing wall-surface testing.

Promenade Framing Inspection Report

Julie Rosen (structural engineer), NPS Intermountain Regional Office
June 2015 (*approx. 12 pages*)

Assesses the second-story promenade framing, finding widespread deterioration in vigas, lintels, posts, and latillas—several requiring replacement. Notes that cottonwood logs were used instead of the higher-strength species specified, reducing load capacity and necessitating a reduction of live load from 100 psf to 50 psf and limits on group sizes. Identifies damaged adobe parapets and leaking canales causing chronic moisture intrusion into the structural wood, as well as failing plaza drainage contributing to flooding and foundation risks. Recommends replacing decayed wood members, improving splice methods, adding temporary fall-protection barriers, repairing parapets and canales, and redesigning the drainage system.

Project Scoping Assessment – Rehabilitate Building Features and Replace Utilities

Facility Engineering Associates PC
November 2022 (*approx. 77 pages*)

Documents extensive deterioration, code deficiencies, and rodent infestation, warning that structural failure could occur within three years. Justifies full replacement of the fort due to the unsuitability of adobe and cottonwood materials for the local climate, repeated failure of past repairs, unsustainable maintenance costs, and the inability of rehabilitation to correct fundamental structural, life-safety, accessibility, and moisture issues. Outlines the costs and logistics of demolishing and reconstructing the fort in phases using modern resilient materials and systems.

Site Visit and Safety Assessment

David Kane, NPS IMRO Health & Wellness Program Manager
October 2023 (*approx. 4 pages*)

Identifies several high-risk conditions requiring urgent action, including unstable parapet blocks over the plaza, severe deterioration of the Billiards Room walls and support structure, and upper-level porches at risk of collapse. Recommends removing loose parapet blocks, installing shoring and restricting access beneath the compromised Billiards Room, fully removing failing upper-story porches, and closing the upper level to visitors.

Occupant Load Review Memorandum

Rodney Ryalls, NPS IMR Regional Fire Marshal (FCO/AHJ)
May 2024 (*approx. 7 pages*)

Limits the fort's occupancy to 49 persons due to non-compliant egress components—no emergency lighting, exit signage, panic hardware, or outward-swinging exit doors. Prohibits overnight sleeping because required fire sprinklers, a fire-alarm system, and secondary egress openings are not present.

Wood Condition Assessment and Restoring Upper-Level Visitor Access

Nick Stolle and Brandon Warren (structural engineers), and Anthony Guida (architect), NPS Intermountain Regional Office
August 2024 (*approx. 18 pages plus attachments*)

Assesses structural wood elements, documenting poorly executed past repairs and significant rot and weathering in vigas, beams, and columns supporting the upper promenade. Recommends improved stormwater management, shoring of plaza portals, bracing unstable adobe walls, and restricting access to unsafe areas. Concludes that partial restoration of upper-level access would require phased repairs, installation of new safety barriers, and ongoing monitoring.

Site Visit and Safety Recommendations

Nick Stolle (structural engineer) and Diane Tate (safety program manager), NPS Intermountain Regional Office
April 2025 (*approx. 20 pages plus attachments*)

Inspection report following the November 2024 snowstorm and installation of shoring in preparation for a limited reopening. Notes worsening cracking at the northeast bastion, increasing separation of the east facade CMU wythe, ongoing deterioration of wood structure at the Billiards Room and southwest bastion, and significant deformation of the Wagon Alley wall. Recommends adjusting shoring, temporarily protecting damaged chimneys, restricting access to unsafe areas, and implementing a daily pre-tour inspection checklist.