



Overview of USS *Constitution* Restorations

USS *Constitution* has undergone numerous “restorations”, “re-builds”, “re-fits”, or “over hauls” throughout her more than 200-year career. As early as 1803, six years after her launch, she was hove-down in Boston at May’s Wharf to have her underwater copper sheathing replaced prior to sailing to the Mediterranean as Commodore Edward Preble’s flagship in the Barbary War. In 1819, Isaac Hull, who had served aboard USS *Constitution* as a young lieutenant during the Quasi-War with France and then as her first War of 1812 captain, wrote to Stephen Decatur: “...[*Constitution had received*] a thorough repair...about eight years after she was built – every beam in her was new, and all the ceilings under the orlops were found rotten, and her plank outside from the water’s edge to the Gunwale were taken off and new put on.”¹

Storms, battle, and accidents all contributed to the general deterioration of the ship, alongside the natural decay of her wooden structure, hemp rigging, and flax sails. The damage that she received after her War of 1812 battles with HMS *Guerriere* and HMS *Java*, to her masts and yards, rigging and sails, and her hull was repaired in the Charlestown Navy Yard. Details of the repair work can be found in RG 217, “4th Auditor’s Settled Accounts, National Archives”. *Constitution*’s overhaul of 1820-1821, just prior to her return to the Mediterranean, saw the Charlestown Navy Yard carpenters digging shot out of her hull, remnants left over from her dramatic 1815 battle against HMS *Cyane* and HMS *Levant*.

Between 1828 and 1830, several surveys of the 30+ year-old ship determined that her frames and keel were sound, but planking inside and out needed to be replaced, including masts, rigging, decking, stem, head, knightsheads, channels, and quarter galleries. The new dry dock of the Charlestown Navy Yard was not yet finished in 1830, and it was decided that *Constitution*’s restoration would be delayed until she could be hauled out in the dock. On June 24, 1833, USS *Constitution* was the first vessel to enter the Charlestown Navy Yard dry dock, in full view of Vice President Martin Van Buren and Secretary of the Navy Levi Woodward. President Andrew

¹ Isaac Hull to Stephen Decatur, October 23, 1819, National Archives, RG 45, “Letters Received, BNC”, as quoted in Edwin C. Bearss, ***Historic Resource Study, Volume I of II, Charlestown Navy Yard, 1800-1842, Boston National Historical Park, Massachusetts***. (U.S. Department of the Interior, National Park Service, 1984), 307

Jackson, for whom the docking of the ship had been delayed until his arrival in Boston, was too ill to attend the 5 a.m. event. Isaac Hull was once again on *Constitution's* quarter deck, giving the commands for her dry docking.² The subsequent 1833-1834 rebuilding of *Constitution*, and her 10 months in the dry dock, is often referred to as the ship's first significant "restoration".

Nearly every year or every other year after the 1833 restoration saw *Constitution* receiving some repair or rebuilding to her hull or her rig. The hull of the ship began to be altered between 1847 and 1858, with the upper bulwarks raised ~20"; the waist, which had been open alongside the main hatch from her launch through her World Cruise of 1844-1846, was filled-in to bring *Constitution* in line with the new designs of US Navy warships. The next marked "restoration" was in 1857-1860 and included being hauled at the Portsmouth Navy Yard in Kittery, Maine. This restoration began the ship's transition from an active warship to a sailing training ship for the Navy.

The 1871-1877 restoration in Philadelphia, which was to have been concluded in time for the 1876 centennial celebrations of the United States, but was not, was eventually concluded in time so that the ship could be used as the carrier of the US exhibits intended for the 1878 Paris Exposition. Upon her return from Europe, *Constitution* once again became a Navy sail training ship and took her last cruise under her own power in the early autumn of 1881. *Constitution* was surveyed in the late fall of 1881 and found unfit for sea service. Before the end of the year she was stripped of all that was valuable and down-rigged in preparation to being towed to the Portsmouth Navy Yard, there to have a "house" installed over her spar deck, turning her into a receiving ship. From the installation of the house between late 1882 and early 1883, and the return of the ship to Boston in 1897 for her 100th anniversary, *Constitution* was docked infrequently, the last, in a floating dry dock, where her hull seams were caulked as part of her preparation for being towed to Boston. She returned to Boston in September, 1897, and remained with her receiving ship house until the "cosmetic" water-borne restoration of 1906-1907 at the Charlestown Navy Yard.³

Naval Constructor Elliot Snow supervised the 1906 restoration which was conducted while the ship remained afloat; no work was accomplished below the waterline, including addressing the hogging (bending) of *Constitution's* keel. The receiving ship house was removed, new masts, yards, and rigging were installed, and surface hull work was accomplished, including the lowering of the upper bulwarks and the opening of the waist bulwarks that had been raised and filled in by 1847. The 1812 "Isaac Hull" model at the East India Marine Society in Salem, Massachusetts (today the Peabody Essex Museum), was a principle piece of three dimensional documentation

² Tyrone G. Martin. *A Most Fortunate Ship, A Narrative History of Old Ironsides*, 2nd ed. Annapolis, MD: Naval Institute Press, 1997, 233-239.

³ Ibid, 336-338.

consulted for the work.⁴ At the conclusion of the 1906-1907, ~\$100,000 restoration, *Constitution* had the superficial look (including 55 reproduction guns – all identical), of an 1812 warship.

By 1925, *Constitution* had fallen into a seriously decayed state. The last significant structural work on the ship had been the 1871-77 re-build, nearly 50 years before. A survey found her hull rotten, including frames above the waterline, rotten masts and rigging, and a 14” hog in her keel threatening to break the ship in two (in fact, the keelson was broken in two just abaft the foremast step). The subsequent 1927-1931, nearly \$1 million, re-build would bring the ship back to a strong, sea-worthy state. LT John A. Lord was the supervisor of the work and he began his research into *Constitution*'s physical history as early as 1925. Lord concluded that the lowered bulwarks and open waist, re-created in the 1906 restoration were erroneous. Although Lord and staff professed their intention to restore *Constitution* to the ship's 1812 era, plans and research from multiple periods in the ship's 19th century history were used. It appears that Lord followed the bulwarks design, respecting height and filled in waist, of the 1847, Samuel Pook plan of *Constitution* and did not consult, as Elliot Snow had done earlier, the 1812 - era model of *Constitution* at the East India Marine Society.⁵

The 1931 “U.S. Frigate CONSTITUTION (IX21) – Research Memorandum” includes the following statement concerning the 1906 re-creation of the lowered bulwarks and open waist: “During the years 1906-1907 the CONSTITUTION was repaired at the Navy Yard, Boston...Bulwarks were lowered as per original *tentative* [Joshua Humphreys] design...” [emphasis added]⁶

The following are a series of quotes from the introduction of the 1931 Research Memorandum:

“U.S. Frigate CONSTITUTION (IX21) – Research Memorandum [c. 1931]”

“During the recent restoration [1927-1931] about 85 percent of the ship has been renewed, leaving about 15 percent of the original material still intact.”⁷

CONDITION PRIOR TO RESTORATION

“For many years it had been evident to even a casual observer that the CONSTITUTION was rapidly disintegrating. She was badly distorted; 11 ¼ inches wider on the port side than on

⁴ The 1812 model of USS *Constitution* was made for Isaac Hull by members of his crew & repaired by British sailors who were prisoners of war in Salem. Purportedly, Hull expressed the sentiment that this model was an accurate representation of “Old Ironsides”.

⁵ Photo-static copy of Samuel Pook 1847 plan USS *Constitution* was found among John A. Lord's papers at the USS Constitution Museum, Boston. See, **Register, John Abel Lord (1872-1945) Collection, 1781-1985, Bulk, 1925-1931, www.usconstitutionmuseum.org.**

⁶ Commandant, Boston [Navy Yard]. “U.S. Frigate CONSTITUTION (IX21) – Research Memorandum”. Boston: U.S. Navy, [Copy date-stamped, “NOV 27, 1931”], 3.

⁷ Ibid

*the starboard, stem 8 ¾ inches to port, and a 14 ½ inch hog in the hull. All deck beams were badly decayed at the ends; many of them had been spliced at the ends during repair periods and had decayed at centerline of beam. Most of the white oak and live oak knees and breast hooks required renewal due to dry and wet rot. The transverse framing, from first futtock up to the rail top timbers was either badly decayed or was in short lengths due to repair periods, greatly weakening the structural strength of the ship because of improper shifting of frame butts. The keelson, built of laminated live oak 7 ¾" thick in lengths of 22 to 24 feet, was in a decayed condition. The keelson was broken in two just abaft of foremast mast step. Deck planking was decayed, and the spar deck had been covered with furring secured to old planking. Portions of the hold ceiling were so badly decayed that concrete had been used in filling the holes."*⁸

*"There were a few CONSTITUTION plans available at Boston [Navy Yard], one of which was the original Sheer, Half Breadth and Body Plan [by Joshua Humphreys, 1794, drawn by William Doughty]. However, this latter plan was of small value due to the original draft having been changed prior to building, 1794-1797. The CONSTITUTION was built deeper than the other frigates by the installation of 9" X 24" deadwood below the frame floors; her moulded beam was increased 8 inches, and she was given a greater tumble-home. Other plans available at Boston were largely incorrect, some representing the ship prior to repair and restoration periods. Confusion therefore existed as to the correct general design and fittings of the period desired by the Bureau of Construction and Repair, i.e., 1812-1814."*⁹ [Unfortunately, Lord did not explain how he had come to these design conclusions, but he believed them, for they appear to be his guiding principles for the alteration of *Constitution* in the 1927-31 work.]

Subsequent to the nearly complete re-build of *Constitution's* structure in the 1927 restoration, the ship was outfitted for her National Cruise, where she was towed on a three-year, three-coast voyage around the United States. Modern furniture and cabin installations in the then popular Colonial Revival style, water tanks for the hold, and cased displays were installed. From her return in 1934 to the beginning of the 1973-1976 restoration, the ship remained much as she looked from the 1927 restoration and the 1931-1934 National Cruise, even through each post-1927 restoration or repair period.

As the 20th century progressed, the 1963-64 restoration saw the beginning of subtle changes in materials used in the ship's restorations. For the first time in more than 160 years, hemp was no longer available for the rigging and polypropylene was substituted. The large-sized timbers for the hull framing and planking necessitated the use of laminated white oak and Douglas fir.

Beginning with the 1973 restoration, the decision was made that *Constitution* should once again be brought back to the look of an 1812 warship. Exhibit cases, display objects including mannequins with reproduction uniforms, were removed and placed on long-term loan at the newly created USS Constitution Museum. CDR Tyrone G.

⁸ "Research Memorandum", 4.

⁹ Ibid, 6.

Martin, commanding officer of *Constitution* 1974-1978, started his decades of research on the ship and began promoting the notion that the ship should be returned to her War of 1812 configuration. By the time the 1973-76 restoration was concluded, a white oak grove in Crane, Indiana had been set aside as “*Constitution Grove*”, from which individual trees are occasionally selected for use in maintenance and restoration work on the ship.

After the 1927-31 work, the 1992-96 restoration is considered the next most important 20th century work executed on *Constitution*. The ship was dry docked in September, 1992, and thus began a 4-year, 5-part initiative to restore the physical strength to the nearly 200-year-old warship. Using Joshua Humphreys’ ***Dimensions and sizes of materials for building a Frigate of forty-four guns***, and contemporary documentation including plans, paintings, and battle damage records, the ship re-gained structural elements that had long ago been removed and whose removal contributed to the decline in physical strength, including the recurring 14” hog in the ship’s keel. Thick strakes, standard knees, extra stanchions, berth deck knees, and diagonal riders in her lower hold all contributed to supporting the newly straightened keel, the weight of the replica 1927 guns on the spar and gun decks, and provided the structural strength needed to allow the ship to sail on 21 July 1997 as part of her 200th anniversary celebrations.

The 2007-2010 restoration brought the War of 1812 “look” back to *Constitution*’s hull. The bulwarks that had been raised ~20” in the 1927-31 restoration per the 1847 Pook plan were lowered to the 1812 cap rail height just above the spar deck gun ports. In addition and, most significant, the waist bulwarks alongside the main hatch were cut open and replaced with custom-made, recreated hammock “cranes” (U-shaped irons), as seen in 3 dimension on the 1812 Isaac Hull model at the Peabody Essex Museum. Lowering the upper bulwarks and opening the waist bulwarks removed approximately 20 tons of white oak and live oak from the ship, thus eliminating excess weight from the 215 year old keel.

Slowly, USS *Constitution* is being restored to her War of 1812 appearance, “as far as practicable”, as stated in the mission of the Naval History & Heritage Command Detachment Boston. Still, there are significant elements in the ship that have either not been changed because that work has yet to be scheduled, cannot be changed due to life safety strictures, or because the research conducted has not been able to satisfy questions raised for re-building. USS *Constitution*, having had such a long Navy career, will likely always be a combination of elements from different centuries and periods in her career.

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