BARRACKS, BAKERIES, AND BOWLING ALLEYS
NON-TACTICAL STRUCTURES AT AMERICAN COAST ARTILLERY FORTS

Mark Berhow, Joel Eastman, and Bolling Smith

This section deals with a topic often neglected in studies on American coast defenses—non-tactical structures. These were the buildings that housed the men and supplies necessary to run and maintain a fort, which were small towns unto themselves. The text describes the permanent and temporary buildings constructed at coast artillery forts in the twentieth century. Photographs illustrate standard structures and a gazetteer lists forts where these buildings survive.

Large brick and stone forts built previous to 1860 were usually designed to be self-contained, with quarters and storehouses located within the defensive walls. However, it was difficult to maintain a garrison in these cramped quarters for long, and non-tactical structures were soon built outside of the walls. After the Civil War most of the non-tactical structures were constructed outside of the original forts, and planners were attempting to organize the buildings around a parade ground similar to the posts established on the western frontier.

When the harbor defenses of the United States were modernized in 1890-1910, a new system of defensive works were created. Rather than the compact defenses of the early systems, the modern forts consisted of tactical and non-tactical structures spread over hundreds of acres of land. The U.S. Army Corps of Engineers selected the locations, purchased additional land, sited, designed, and constructed the tactical structures—batteries, mine facilities, observation stations, plotting rooms and searchlight shelters. The Quartermaster Corps (up to 1941) sited, designed and constructed most of the non-tactical structures—barracks, officer’s quarters, administration buildings, storehouses, recreation buildings, and other structures. The quartermasters created a landscape plan to utilize the land efficiently while at the same time creating an aesthetically attractive post laid out in tradition patterns. The Quartermaster Corps used the same standard building plans and layouts at coast artillery forts as it did at cavalry, field artillery, and infantry forts—but it was usually more challenging to implement a traditional plan at the unique locations of coast artillery forts than it was at sites in the interior.
Layouts of Non-Tactical Structures, 1890-1917

The center of the non-tactical area of a coast artillery fort was the parade ground. Officer’s quarters were sited on one side of the parade ground, while barracks were placed on the other, at a lower elevation, if possible. The administration building or harbor defense headquarters was given a prominent location on the parade ground, as were the commanding officer’s quarters, the flagpole, and bandstand. Non-commissioned officers quarters were located off of the parade ground proper, as was the post exchange, gymnasium, bowling alley, hospital, guardhouse, bakery, fire station, chapel, library, officers club, and theater. Many forts in isolated areas had cemeteries. Good existing examples of an 1890s coast artillery posts are Fort Worden, Harbor Defenses of the Puget Sound, and Fort Columbia, Harbor Defenses of the Columbia River, both now Washington State parks.
Although the parade ground was used as a general athletic field, tennis and handball courts, and baseball fields were also built in open areas of the fort. Storehouses, commissary, workshops, and stables were usually centered near the quartermaster wharf. A system of permanent roads served the entire fort, and the streets were usually named. Railroads and tramways were built during the construction of the forts, and these lines often continued to be used. Forts (eventually) had their own water, sewer, telephone, and electrical systems. If municipal water and commercial power services were available, the army used them, but at many sites the engineers built their own water and electrical plants and distribution systems. Sewer pipes ran into the ocean.
middle and bottom photos, Interior of barracks, Fort Columbia, WA 1910s (Greg Hagge photo collection)
Top and middle photos, mess hall in barracks at Fort Columbia (Greg Hagge photo collection)

Officers and family on porch steps, Fort Casey, Christmas 1913 (Greg Hagge photo collection)
Barracks mess hall, Fort Worden (Greg Hagge photo collection)

Barracks recreation/sitting room, Fort Worden (Greg Hagge photo collection)

Funeral at Fort Worden cemetery (Greg Hagge photo collection)
Ice houses, and in northern areas, ice ponds, were also built to provide refrigeration for food in the years before electrical cooling became available. Systems for the disposal of garbage and rubbish were also created. Garbage and combustible waste were burned in crematoria, while non-combustible materials were disposed of in landfills or dumped into the ocean. The major fuel at forts was coal, and a system of unloading, transporting, and storing the fuel was developed, usually relying on mule-drawn wagons.
Most of the non-tactical structures at the forts constructed during the Endicott-Taft period were designed to be permanent structures. These wood-frame buildings were built on stone foundations with slate roofs, sided with local brick, clapboard, or stucco. The Quartermaster Corps architect’s office created standard plans for all types of buildings. Those designed at the turn-of-the-century—when most Coast Artillery forts were constructed—were of Colonial Revival style with elements of Queen Anne style in the officers quarters. As the century progressed, new styles were adopted, such as Italianate and Spanish Revival, and these styles were used when additional buildings were constructed. Store houses and pumping plants used more practical industrial or utilitarian styles.

The interiors of buildings were finished with wood floors, plaster walls with wood trim, and pressed metal ceilings. All structures where officers and men lived or worked had electricity, running water and flush toilets. Each barracks was designed to house a company or battery of 100 men and was self-contained with its own kitchen, dining room, day room, barber shop, and tailor shop. Sleeping quarters were on the second floor, while the lavatory and latrine were located in the basement in northern climates. In the south, separate lavatory and latrine buildings were sometimes built. Large forts had double barracks—two 100 man barracks built end-to-end—which functioned as two separate barracks. Forts which served as the headquarters post for a harbor defense usually had a band barracks.

Officer’s quarters varied in size and elaborateness depending upon the rank of officer for whom the building was intended. The Commanding Officer’s Quarters was usually the largest and most elaborate of the officer’s quarters, and it was placed, if possible, on the highest and most prominent location on the parade ground. Other senior officers were assigned single quarters, while the majority of the quarters were double quarters for two families. Large forts had a Bachelor Officer’s Quarters with its own mess. Non-Commissioned Officer’s quarters were usually double sets.

Recreation was considered important by the Army at the turn-of-the-century. It was believed that it not only maintained physical fitness, but also promoted competitiveness which made the men more effective in combat. Every large fort was provided with a gymnasium and bowling alley, as well as athletic fields, and handball and tennis courts.

Maintenance, supply and transportation required numerous permanent buildings. Carpenter and plumbing shops, Quartermaster and Commissary storehouses, a stable and wagon sheds, power and pumping plants, coal storage and wood sheds all usually were located in the same area, often near the Quartermaster wharf.
Listed below are non-tactical structures and facilities that were built at many Coast Artillery forts during the Endicott period.

<table>
<thead>
<tr>
<th>Administration Building</th>
<th>Officers Club</th>
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<tbody>
<tr>
<td>Artillery Engineer Storehouse</td>
<td>Oil House</td>
</tr>
<tr>
<td>Athletic Field</td>
<td>Ordnance Machine Shop</td>
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<tr>
<td>Bakery</td>
<td>Ordnance Storehouse</td>
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<tr>
<td>Barracks, single and double</td>
<td>Plumbing Shop</td>
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<tr>
<td>Barracks, band</td>
<td>Post Theater, 1938</td>
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<tr>
<td>Basketball Court</td>
<td>Post Exchange</td>
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<tr>
<td>Baseball Field</td>
<td>Power (electrical) Plant</td>
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<tr>
<td>Blacksmith Shop</td>
<td>Pumping (water) Plant</td>
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<tr>
<td>Bowling Alley</td>
<td>Quartermaster Storehouse</td>
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<tr>
<td>Carpentry Shop</td>
<td>Quartermaster Wharf</td>
</tr>
<tr>
<td>Cemetery</td>
<td>Quarters, Officers, single and double</td>
</tr>
<tr>
<td>Coal Storage</td>
<td>Quarters, Bachelors Officers, and mess</td>
</tr>
<tr>
<td>Commissary Storehouse</td>
<td>Quarters, Non-Commissioned, single &amp; double</td>
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<tr>
<td>Dump</td>
<td>Quarters, Married Enlisted Men</td>
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<tr>
<td>Electrical Substation</td>
<td>Quarters, Firemen, double</td>
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<tr>
<td>Flag Pole</td>
<td>Salute Gun</td>
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<tr>
<td>Fire Apparatus Building</td>
<td>Scale House</td>
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<tr>
<td>Garages</td>
<td>Sentry Box</td>
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<tr>
<td>Garbage Crematory</td>
<td>Service (enlisted men’s) Club</td>
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<tr>
<td>Gasoline pump and tank</td>
<td>School House</td>
</tr>
<tr>
<td>Greenhouse</td>
<td>Stable</td>
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<tr>
<td>Guard House</td>
<td>Swimming Pool</td>
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<tr>
<td>Gymnasium</td>
<td>Teamsters Office</td>
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<tr>
<td>Harbor Defense Headquarters Building</td>
<td>Tennis Courts</td>
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<td>Handball Courts</td>
<td>Veterinary Office</td>
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<tr>
<td>Hospital</td>
<td>Wagon Shed</td>
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<tr>
<td>Hospital Steward's Quarters</td>
<td>Water Tank</td>
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<tr>
<td>Ice House</td>
<td>Well Shelter</td>
</tr>
<tr>
<td>Library and Reading Room</td>
<td>Wood Shed</td>
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<tr>
<td>Non-Commissioned Officers Club</td>
<td>Work Shops</td>
</tr>
</tbody>
</table>

Parade at Fort Stevens, OR
Fort Worden reservation, 1936 (NARA) for symbol key please see section on blueprints and maps
Quartermaster Buildings: Records and Plans

from an article by Bolling Smith in the Coast Defense Journal Vol. 16, No. 2 pp. 29-42.

The Quartermaster Corps kept careful historical records on the buildings and structures for which it was responsible. These records were transferred to the Corps of Engineers along with the responsibility for construction and maintenance. At Archives II in College Park, MD, Entries 393 and 394, RG 77 (Records of the Chief of Engineers), contain many of these records, arranged generally in alphabetical order by post. Entry 393 contains the records of “active” posts, 1905-1942, while the much smaller Entry 394 contains the records of “abandoned” posts, 1905-1924.

The “Historical Record of Buildings” described individual structures. The term building was used in the broadest sense, and included wharfs, manure pits, tennis courts, and even statues.

The first such forms in the record, dating from 1905, are un-numbered. They contain information on two buildings, one on each side of the 10 x 12 card-stock form. Filed by post building number, the forms list the construction date, materials, and equipment (to include wash basins, showers, urinals, screen doors, and wall lockers), as well as an annual list of expenditures for repairs. Perhaps most valuable, the forms normally displayed a 4 x 5-inch black and white photograph of the structure. While some of these photographs are dark and some have faded, many are extremely sharp, showing gleaming new buildings, or in some cases, failing remnants from the last century. Occasionally, a terse notation will be found to the effect that “Structure is underground, hence no photograph” (in the case of a reservoir), “No photography permitted” (in the case of a magazine), or “Structure burned before photograph could be taken.” As a group, however, these photographs provide an unparalleled glimpse of the actual appearance of these forts almost 100 years ago. With the buildings mostly gone, these photographs are our best information on how they actually looked.

In 1913, the forms were designated Form 173 a. By 1921, the forms, now 173 A, were enlarged to 10 x 14 inches and covered only one structure. On the reverse a grid pattern was provided for a simple plan of the structure. Plans were drawn for some structures; others had blueprints pasted on, while still others were blank. In 1924, the form was renumbered 117, but otherwise remained relatively unchanged (see the example of the form 173A for the Commanding Officer’s Quarters at Fort Worden, HD Puget Sound, WA on the following page).

These forms cover buildings built until the Corps of Engineers assumed responsibility days before the United States entered World War II. Both permanent and temporary buildings are included, as well as a number of civilian structures taken over by the army when the land on which they stood became part of a military post.

Quarters, which included barracks and houses for officers and NCOs, along with the buildings that most closely represented the service, such as administration buildings, guardhouses, post exchanges, and theaters, tended to be attractive buildings. Built in a number of styles at different posts, they were intended to create an atmosphere of attractive order.

Supporting buildings, on the other hand, tended to be more utilitarian. Without the stylistic embellishments of the buildings that served to represent the army, the supporting structures were normally simple frame buildings, although the prevalence of galvanized tin structures is surprising.

One of the most important entries on the “Historical Record of Buildings,” was the OQMG (Office of the Quartermaster General) plan number, which was normally listed, at least for 1891-1917 buildings. These plan numbers, in turn, lead to another valuable source. From 1891 through 1917, the quartermasters built most structures to numbered standard plans. As these plans were updated, letter suffixes were added. Thus, for example, standard plans No. 120 were for a double set of officers’ quarters, and standard plans No. 120-E were for duplex lieutenant’s quarters.
Place: Fort Warden, Washington

Designation of building: Field Officer Quarters

Total cost: $13,521.36

Date completed: April 15, 1904

Material:
- Walls: Frame
- Foundation: Stone
- Roof: Slate
- Floors: Wood

Total floor area above basement, square feet: 2222

Size:
- Main building: 17' x 53'
- Wings:
  - Boiler, Automatic Oil Burner
    - (Type of fuel: Steam)
  - Automatic Oil Water Heater
    - (Type of domestic hot water heater)

Height of first floor above ground: 11.5 ft.

How lighted: Electrical

Water connections: Yes

Sewer connections: Yes

Gas connections: Yes

COOKING RANGES INSTALLED (Give quantity and size):
- Coal: 1
- Gas: 1
- Electric 1-6 ft. cap. 1

REFRIGERATORS INSTALLED (Give quantity and size):
- Gas: 1

METERS INSTALLED (Give quantity and capacity):
- Electric: 2 (1 - 115Y, 1 - 1220)
- Oil: 1
- Steam: 1
- Water: 1

ADDITIONS AND INSTALLATIONS
(Below enter chronologically all modifications, additions, introductions of water, sewer, lights, heating, etc.)

<table>
<thead>
<tr>
<th>DATE</th>
<th>COST</th>
<th>DATE</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/6/41</td>
<td>Total amount expended up to and including F.Y. 1940, for Maintenance, Repair and Alteration. $13,460.75</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

INSTRUCTIONS:
- "a": State whether heated from central heating or by individual heating plants, stoves, furnaces, or fireplaces.
- "b": State whether steam, vapor, hot water, or hot air.
- "c": State whether gas, coal, oil, or central heating plant.

See reverse side of form.
The Cartographic Branch at Archives II contains “Standard Plans of Army Post Buildings (Received from Quartermaster Office) 1891-1917.” These are hundreds of standard plans prepared by the Office of the Quartermaster General. A notebook lists the plans by number and suffix, with the number of sheets prepared. To request them, merely specify RG 77, PI NM-19, “Standard Plans of Army Post Buildings 1891-1917,” with the plan number and letter suffix desired. The number of sheets varies from one to more than a dozen, and averages around eight or nine for larger structures. The plans are in ink on linen, usually about 24 x 37 inches. For most buildings there are front, rear, and side elevations, and plans for each floor. These plans show structural details, as well as plumbing, heating, and lighting fixtures. The remaining sheets show smaller details, such as doors, windows, coal chutes, and furniture such as cupboards and dressers. The scale for the elevations and plans is usually 1/4 inch = 1 foot, while the scale for the details varies from 1/2 inch to 3 inches = 1 foot.

The Puget Sound Forts Today:
Ex-Coast Artillery Reservations as Washington State Parks

Near Port Townsend, Washington, are three coast artillery posts—now Washington State Parks—that retain a superb collection of tactical and non-tactical structures, as well as some truly rare examples of coast artillery weapons. Port Townsend is located on the NE corner of the scenic Olympic Peninsula. Located on the head of land at the north end of the town is Fort Worden State Park, possibly the premier publicly-owned, intact Endicott-era reservation in the US. Across Admiralty Inlet is Fort Casey State Park with its impressive main battery row and the only two 10-inch disappearing guns in the United States. The third big Puget Sound Endicott fort, Fort Flagler State Park, is located at the tip of Marrowstone Island some 3 miles to south (but a 35 mile drive by car). A visit to Forts Worden, Casey, and Flagler provides a very comprehensive overview of the components of the early modern American coastal defense systems. The parks are located some 60 miles north of downtown Seattle, and it takes 2-3 hours to drive there depending on which route, and the number of ferries, taken.

The photographs and maps provided here give an overview of the features of Forts Worden and Casey as they exist today. Nearly all the salient features found in the turn of the century American coast defenses forts can be seen. The garrison building collection at Fort Worden is superb and the seacoast artillery piece collection at Fort Casey is unmatched by any other site in the US, only exceeded by the collection found on Corregidor Island in the Philippines.
The Fort Worden reservation was obtained by the State of Washington in 1957. The state was fortunate in obtaining the entire reservation intact with most of its buildings in good shape. The state has turned most of the buildings into a conference center, renting out the barracks and other building space to groups and organizations. The park rents out the officer’s quarters as vacation housing, so one can even stay here and really get feeling for the officer’s life, if planned far enough in advance as these rentals are very popular. The state developed a large camping area on the sand spit leading to Point Wilson. In the late 1990s, the state began an impressive effort to repair and restore the exteriors of these buildings.

Inspection of the maps included in this article show that many of the key buildings present in 1921 still remain today. The main parade ground area, all the entertainment facilities, the quartermaster store houses, the hospital, a band barracks, even the post cemetery are all there for inspection. You may not be able to get into all the buildings due to their use, but they are there to see and photograph. These buildings are being maintained and will be around for the foreseeable future.

All of Fort Worden’s gun batteries remain and are in very good shape—two 12-inch mortar batteries, two 3-inch rapid fire batteries, two 6-inch disappearing batteries, a 5-inch battery, a magnificent late design 12-inch disappearing battery out by the lighthouse, and the fantastic main gun line of 10- & 12- inch gun batteries on the top of the hill. One of the disappointments with Worden is the lack of intact fire control and communication structures on the post. Many were built of wood and have been destroyed over the years. Others, along with some nice old searchlight shelters, can be found using old maps and poking around on the trails in the park. All in all, a visit to Fort Worden State Park will give an excellent overall view of the site, and the tactical and non-tactical structures that made up an American coast artillery fort.
FORT WORDEN BATTERIES

BATTERY PUTNAM 3.2" GUNS
BATTERY WALKER 3.2" GUNS
BATTERY VICARS 3.2" GUNS
BATTERY STORRIDGE 4.6" GUNS
BATTERY ROLLS 4.6" GUNS
BATTERY RANDOLF 3.0" GUNS
BATTERY QUIRLES 3.0" GUNS
BATTERY BENSON 3.0" GUNS
BATTERY ASH 3.2" GUNS
BATTERY KINZIE 3.2" GUNS
BATTERY BRANNAN 4.6" MORTARS
BATTERY POWELL 4.6" MORTARS

Fort Worden Buildings by # and (Use)
1. Commanding Officers' Quarters 1905 (museum)
2-16. Officers Row 1905 (accommodations)
24. Chapel 1941
25. Theater 1932
26. Dillon Hangar 1921 (McCurdy Pavilion)
200. Post Headquarters 1905 (State Park Office)
201. Barracks 1904 (Coast Artillery Museum)
202-204. Barracks Row 1905 (accommodations)
204. Barracks 1904 (Field Office & Quartermaster)
205. Regimental Band Building 1904 (classroom)
210. Fort Worden Commandant 2005 (cool meeting room)
221. Laundry 1904
222. Original Post HQ 1904 (Classroom)
223. Headquarters Barracks 1906 (accommodations)
229. Alexander's Castle 1897 (accommodations)
231. Storage shed 1897 (chow shed)
235. Temporary Barracks 1943 (Residence)
236. Maintenance Building 1941 (Truck Shop)
237. Laundry 1922 (Laundry Building)
238. Hospital School 1905 (Training Center)
239. Guard House 1904 (Visitor Center)
306-308. Guardhouse 1905-10
310. Post Exchange & Gym 1900 (Madonna)
315. Powder House 1907 (Gardening school)
326-328. Barracks 1941 (special events)
329. Guardhouse 1941 (Training Center)
335. Motor Post 1944 (storage)
372. Wagon Shed 1909 (transport quarters)
409. Orange House 1903
414. Radio Building 1943
430. Harbor Entrance Control Post 1946 (seasonal museum)
501. Gate House 1908 (seasonal store)
502. Orange machine shop 1920 (Natural History Exhibit)
512. Quartermaster Wharf 1944 (PT Marine Science Center)
525. Orange shed 1929 (Public Dock)

Fort Worden State Park, 2010 (Puget Sound Coast Artillery Museum)
Comapny Barracks, Fort Worden, 2010 (MAB)

Double Company Barracks, Fort Worden, 2010 (MAB)

Band Barracks, Fort Worden, 2010 (MAB)
Double Officer’s Quarters, Fort Worden, 2010 (MAB)

Large Double Officer’s Quarters, Fort Worden, 2010 (MAB)

Commanding Officer’s Quarters, Fort Worden, 2010 (MAB)
Batchelor Officer’s Quarters, Fort Worden, 2010 (MAB)

Fort Administration Building, Fort Worden, 2010 (MAB)

Headquarters Building, Harbor Defenses of Puget Sound, Fort Worden, 2010 (MAB)
WW II Chapel, Fort Worden, 2010 (MAB)

Post Exchange and Gymnasium, Fort Worden, 2010 (MAB)

WW II USO Building, Fort Worden, 2010 (MAB)
Cemetary, Fort Worden, 2010 (MAB)

Balloon Hanger (modified for a theater), Fort Worden, 2010 (MAB)

Central Powerhouse, Fort Worden, 2010 (MAB)
Quatermaster Storehouse, Fort Worden, 2010 (MAB)

Quatermaster Commissary Storehouses, Fort Worden, 2010 (MAB)

Wagon Shed, Fort Worden, 2010 (MAB)
Main gun line, Fort Worden, 2010 (MAB)

Ordnance Storehouse, Fort Worden, 2010 (MAB)

Harbor Entrance/Defense Command Post, Fort Worden, 2010 (MAB)
About the only thing you cannot see at Fort Worden is examples of the actual artillery pieces themselves. For that you merely need to ride the ferry from downtown Port Townsend over to Keystone Landing on Whidby Island and visit Fort Casey State Park.

Fort Casey State Park, Whidby Island, WA

Fort Casey did not fare as well as Fort Worden in non-tactical building survival. Many buildings, including the barracks, were torn down in 1938. New barracks were built in 1941-42. After deactivation in 1953, the reservation was divided in half. Most of the garrison area went to Seattle Pacific University, which uses the area today as an extension campus. Some additional land went into private ownership. The rest of the reservation, including all but one of the batteries, went to the state which developed a state park.

The impressive fortification area was built on a low bluff overlooking Admiralty Inlet. The trees and shrubs have been kept under control and the area looks much the same as it did when the army was there. The main parking lot overlooks the impressive main gun line, seven emplacements in a row for 10-inch guns on disappearing carriages. At the center of attention, but to the north end of the main gun line, are two actual M1895MI (the model designation) 10-inch guns on M1901 disappearing carriages. These were retrieved from Battery Warwick, Fort Wint, on El Grande Island in Subic Bay, the Philippines, brought over by the State of Washington in 1963. One really can not appreciate the size of these weapons until one sees them up close and in person—and in a battery emplacement.

Next to the main gun line is a four emplacement 6-inch gun battery and next to that is a two gun 3-inch rapid fire battery—Battery Trevor with its guns. The state retrieved two 3-inch M1903 guns on M1903 pedestal mounts from Fort Wint which were re-installed in Battery Trevor. Fort Casey is doubly blessed with four examples of two types of rare American seacoast artillery. Also open for inspection, and in very fine shape, are a number of fire control structures, the observation stations which housed the optical instruments and communication equipment used in preparing the data for range and direction of the fire of the guns. In front of the battery area are a number of interesting searchlight housing structures.
American Seacoast Defenses

Fort Casey Reservation 1936 (NARA)
Parade Ground, Fort Casey, 2010 (MAB)

Fire Control Stations, Fort Casey, 2010 (MAB)

Battery Worth, Fort Casey, 2010 (MAB)
The 10 inch guns on disappearing carriages at Battery Worth, Fort Casey, 2010 (MAB)
The 10 inch guns on disappearing carriages at Battery Worth, Fort Casey, 2010 (MAB)
3-inch pedestal mount guns at Battery Trevor, Fort Casey, 2010 (MAB)
Fort Flagler also lost a number of buildings in 1938, including its barracks and officer’s quarters. A number of WW II Mobilization barracks were built in the 1941. The state of Washington received the entire original reservation which was then made into a state park in the 1960s. All the batteries remain, though some are in danger of being undermined by substantial erosion along the bluff at the north tip of the island. The main line of two 10-inch barbette batteries and the 12-inch “altered gun-lift” battery are unique. Two 3-inch guns (a M1903 army pedestal and a navy pedestal mount) have been remounted in Battery Wansboro. A number of searchlight shelters and fire control stations also remain relatively intact. The remaining post buildings include the hospital, hospital steward’s quarters, a few storehouses, and the WW II barracks. The state has developed camping and picnicking areas, but the bulk of the reservation has been left undeveloped. Recently, the state has begun the clearing of bush and vegetation around the batteries and military roadways in the park, improving both the maintenance of these structures and visual access.
Fort Flagler Reservation 1936 (NARA)
The other Washington coast artillery fort parks are Fort Ward State Park (about half of the old reservation, the rest including the garrison area is privately owned), Fort Ebey State Park, Salt Creek County Recreation Area & Striped Peak State Nature Reserve (Camp Hayden), Manchester State Park (Middle Point Military Reservation), Goat Island Game Reserve (Fort Whitman), Fort Columbia State Park, and Cape Disappointment State Park (Fort Canby). A visit to the Washington State “fort” parks is a superb opportunity for those historians wishing to see examples of 1890 to 1945-era American seacoast fortifications in all their glory—batteries, buildings, and weapons.
Cantonments and Temporary Non-Tactical Buildings

In addition to permanent structures many temporary buildings were constructed over time at Coast Artillery forts. These were wood-framed and wood-sided structures built on posts or frost walls, rather than permanent foundations. They were sometimes built utilizing available materials or lumber purchased with funds collected from officers, NCOs, or enlisted men—or by using or converting a building originally on the site or used during the construction of the fort. Such buildings were used as chapels, libraries, officers clubs, NCO and enlisted men's clubs, enlisted men's housing, temporary barracks, officers quarters, and offices.

However, the bulk of the temporary buildings at these forts were built during World War I and World War II. When the United States entered the Great War, the Quartermaster Corps created standardized designs for temporary wooden buildings which could be quickly and inexpensively constructed at training camps opened all over the country. The designs—called the 600 series buildings—included barracks, lavatories and latrines, mess halls, officers quarters, and theaters. Some of these buildings were constructed at coast artillery posts. Most typically the coast artillery posts received a theater, where performances were staged and movies shown to entertain the troops. These 1930s-era “War Department Theaters” often became Service Clubs for enlisted men.

When World War II broke out in Europe in 1939, the Quartermaster Corps created new standardized designs for temporary “mobilization” buildings to be built at a new generation of training camps as the country mobilized to defend itself. The designs—designated the 700 series buildings—included 300 hundred different types of buildings, and they were much more elaborate and better built than the 600 series.

Although temporary, these structures were designed with a two-year life span since the length of the mobilization period was unknown. They were built to standard construction specifications, wood framing 36 inches on center, drop wood siding and rolled asphalt roofing, double-hung windows, central heating, and running water. In general, the toilets, wash-basins, and showers were located in the barracks rather than in a separate latrine. One new type that was built at all large World War II sites, including coast artillery forts and reservations, was a chapel designed to be used by all religious denominations, as part of an effort to support and motivate soldiers of all faiths.

The buildings were initially unpainted, but in 1940 the War Department ordered that they be painted. Immediately after the Pearl Harbor attack, all the buildings were painted khaki or other camouflage colors. Large numbers of these buildings were constructed at permanent Coast Artillery forts in 1940 and 1941. The most common ones built were Chapels, Company Administration and Storehouses, Barracks, Mess Halls, Recreation Buildings, Garages, Storehouses, Officers Quarters and Mess, and Theaters. These sturdy structures housed the men of the National Guard who were called to active duty in the fall of 1940 and the draftees used to expand Coast Artillery Regiments thereafter.
Mobilization buildings built at existing harbor defense forts were sited on a pragmatic basis where space permitted. If land was available, the buildings were grouped to serve a battery (company) of men: two 63 man barracks, a mess hall, a recreation building, and battery administration/storehouse building. If land was scarce, buildings were fitted in wherever space was available, even on the parade ground. After mobilization began, but before Pearl Harbor, some forts commissioned landscape development plans to make the forts as aesthetically pleasing as possible after the addition of the mobilization structures by building new streets and adding scrubs and trees. On December 1, 1941, the Corps of Engineers took over the responsibility for building non-tactical structures from the Quartermaster Corps.

Many Mobilization buildings are still in use today at active Army and National Guard posts and a few survive at coast artillery forts. Listed below are the typical mobilization buildings that would be found at a large coast artillery fort.

- Administration Building
- Barracks
- Company Administration/Storehouse
- Fire Station
- Garage
- Garbage Grinder Building
- Hospital
- Hospital Barracks
- Infirmary
- Mess Hall
- Motor Pool
- Nurses Quarters and Mess
- Officers Quarters and Mess
- Post Chapel
- Post Exchange
- Radio Shelter
- Recreation Building
- Storehouse
- Theater

Post Chapel (left) and 700 series Mobilization Cantonment Construction (right) 1941, Fort McKinley, ME
(from the collection of Joel W. Eastman)
WW II Mobilization Barracks at Fort MacArthur, CA 1992 (MAB)

Administration and Storehouse Building, 700 series Mobilization Cantonment Construction (1941) Fort McKinley, Great Diamond Island, HD Portland, ME (from the collection of Joel W. Eastman)

Barracks 700 series Mobilization Cantonment Construction (1941) Fort McKinley, Great Diamond Island, HD Portland, ME (from the collection of Joel W. Eastman)
World War II Coast Artillery Forts and Reservations:

As the US entered World War II a whole new generation of forts and batteries were being built. However, given the rush to complete construction, few of the new harbor defense sites were formally named. Instead, the sites were referred to as “military reservations,” and the local names of the sites were used to designate them, such as “Jewell Island Military Reservation.”

Once the US entered the war, a new type of temporary non-tactical structure was adopted, called “Modified Theater of Operations” (MTO) buildings. Designed to be used in war zones, the buildings were modified somewhat for use in the Zone of the Interior, the United States, but they were truly temporary. These structures had wood framing 48 inches on center with fiberboard sheathing and 15 pound rolled felt siding held on with wooden battens. Like World War I temporary designs, separate barracks and latrines were adopted, and they were heated by magazine stoves or space heaters. Standard plans were prepared for hundreds of building types. In April 1942, the War Department ordered that Modified Theater of Operations buildings were to be built at all new camps, including new harbor defense sites, and for the expansion of existing camps, posts and stations. In October 1942, the War Department replaced the MTO designs with new Theater of Operations (TO) plans based on the Mobilization designs (700 series), with additional bracing, improved insulation and ventilation, and a variety of siding types other than tar paper.

Modified Theater of Operations buildings built to support new batteries completed after Pearl Harbor also followed a pragmatic approach in siting. Barracks and latrines to serve AMTB batteries were built as close to the batteries as possible given the land available and the nature of the terrain. Some groups of buildings visible from the sea were laid out to appear to be summer cottages. At large reservations with several batteries and large numbers of buildings, landscape plans were developed which included parade grounds, flag poles and named streets. The only examples that survive today are ones that were sold after the war, moved and turned into houses and cottages. Listed below are the types of TO buildings that would be found at a large World War II Coast Artillery fort or military reservation.

- Administration
- Barracks
- Fire Station
- Infirmary
- Lavatory and Latrine
- Mess Hall
- Officers Quarters and Mess
- Post Exchange
- Recreation Building
- Warehouse

Officer’s Quarters—Modified Theater of Operations Cantonment Construction (1942) Jewell Island Military Reservation, HD Portland, ME (from the collection of Joel W. Eastman)
A Gazetteer of Remaining Coast Artillery Forts

Fort Columbia State Park, Chinook, WA

Fort Columbia, of the harbor defenses of the Columbia River, is an excellent example of a small Endicott-era fort. Built at the turn of the last century, the post was turned over pretty much intact to the state of Washington in the late 1950s, which developed it into a historical park. The barracks, two officers quarters, the administration building, two NCO quarters, the hospital, the hospital stewards quarters, the quartermaster building, the fire station, the guardhouse, and the ordnance storehouse remain, along with four gun batteries, two mine casemates, a power house, and several fire control stations. In 1994, the state obtained and relocated two rare surviving 6-inch guns on the WW II shielded mounts and re-installed them in Battery 246, adding to the state's impressive collection of surviving American coast artillery weapons. The state has also recently completed an extensive repair program on the buildings both outside and inside.

The Golden Gate National Recreation Area, National Park Service, The Harbor Defenses of San Francisco, CA

The collection of tactical and non-tactical structures which remain from the Coast Artillery forts and Army reservations around the entrance to San Francisco bay are truly one of the finest groups of military architecture in the United States. All of these reserves are open to the public and are being preserved and managed as public park and trust lands. Several districts of historical buildings are on the National Historic Landmarks list. The remaining buildings and structures span the years of military use from the 1850s to the 1970s.
American Seacoast Defenses

Fort Baker parade ground (Glen Williford 2006)

Barracks, Fort Barry (MAB 1992)

Barracks Fort Cronkhite (MAB 2006)

Harbor Defense Headquarters, Fort Winfield Scott (MAB 2006)
The buildings range from elegant officer’s quarters and enlistedmen’s barracks to large warehouses, storehouses, administrative offices, airplane hangers, medical facilities, and cavalry stables. The remaining seacoast defenses structures include two Third System fortifications, a Civil War-era battery, a unique dynamite battery, dozens of Endicott-era batteries, batteries built during the World War II era, and Nike missile defenses of the 1950s and 1960s.

The establishment of the early modern era coast artillery garrisons led to major building collections which remain from the 1910s at Fort Winfield Scott (next to the Presidio), and Forts Baker and Barry on the Marin Headlands. Fort Cronkhite, north of Fort Barry on the Marin Headlands, is one of the few remaining (partially) intact WW II-era posts and retains a number of mobilization buildings from the period 1940-1945. Major military building collections exist at Fort Mason, the Presidio of San Francisco, Fort Winfield Scott, Fort Baker, Fort Barry, Fort Cronkhite, and Fort McDowell (now Angel Island State Park) dating from the 1850s and on through WW II.

These excellent sites are well documented by brochures and booklets available from the various book stores located around the Golden Gate National Recreation area, including: Map and Guide to the Seacoast Fortifications of the Golden Gate, Official Map and Guide to the Presidio of San Francisco, the Presidio of San Francisco, a Self-Guided Tour to its Architecture; Nike Missile Site SF-88, Alcatraz—Island of Change; Fort Point—Sentry at the Golden Gate; and the Golden Gate National Recreation Area—Guide to the Parks.

Fort MacArthur Reservations, Los Angeles (San Pedro), California

Fort MacArthur, which defended Los Angeles harbor, was the only complete defense facility built on the continental US during the “Taft-era” construction (1910s). The “mission-revival” style buildings around the parade ground are intact—although it is off limits to the general public as it is used by Los Angeles
AFB personnel. It retains the original barracks, guardhouse, post exchange, and officer’s quarters, as well as a number of buildings built in the 1930s and 1940s. The main fortification areas were on separate tracts of land and are now City of Los Angeles parks—Angels Gate and White Point.

Angels Gate Park retains examples of both WW I and WW II mobilization building areas. Battery Os-good-Farley, home of the Fort MacArthur Museum, is quite possibly the most fully preserved early modern American seacoast battery in the United States.

Fort Rosencranz, San Diego, California

A number of Army buildings, including barracks, quartermaster buildings, and officer’s quarters, remain in the garrison area of old Fort Rosencranz. The entire reservation, less the acreage set aside for the Cabrillo National Monument, was transferred to the Navy in the late 1950s. The main Fort Rosencranz garrison area is now part of the submarine base and is generally off limits to civilians. Cabrillo National Monument has control of a few searchlight shelters and some base end stations, but few military buildings.

Fort Crockett, Galveston, Texas

This was the main Army garrison post for the Galveston area forts, including Fort San Jacinto and Fort Travis. The post had to be completely rebuilt after the 1900 hurricane. The buildings were made much more substantial. The post was used through World War II. A large number of building remain on the old reservation which is used by a variety of national, state, local and private entities. The buildings under the care of NOAA have been renovated for new uses.
Fort Barrancas, Pensacola, Florida

This was the main Army garrison post for the Pensacola area forts, including Fort Pickens and Fort McRee. Many of the post structures were built during the early 1900s and remain today. However, the garrison area was transferred to the Navy in the 1950s, and may not be open to the public.

Fort Caswell, Cape Fear, North Carolina

The Baptist State Convention of North Carolina purchased the entire reservation in 1949. The Baptists had purchased a reserve that contained over 70 buildings. Since then the organization has refurbished most of the buildings and put them to use as classrooms, residence rooms and halls, auditoriums, administrative offices, and maintenance facilities. The overall appearance of the buildings and batteries remain unchanged, making this a first-class existing example of a turn of the century coast artillery post. The Assembly is not open to the general public and permission must be sought to visit Fort Caswell.

Hospital and quarters, Fort Caswell, NC

The Harbor Defenses of Chesapeake Bay: Fort Monroe, Fort Story, & Camp Pendleton

These three fine posts contain a variety of interesting buildings and structures. All three are active Army facilities and entry to certain areas may be restricted.

Fort Monroe is the “cradle” of the Coast Artillery Corps; it was the location of the office of the Chief of the Coast Artillery and the Coast Artillery School. Fort Monroe retains a large collection of quarters, barracks, administration, school, supply, and storage buildings, etc. As it is still in use by the Army, many of these buildings have been remodeled and used for other purposes over the years. The magnificent Third System fort, one of the largest built by the United States, is also in good shape. The modern-era batteries, however, have not fared as well. About half of the batteries built at Monroe have been destroyed to make space for additional construction; the other half have had their earthen covers removed for the most part. Still, if you have an interest in American coast artillery, this post is a must see.

Across Hampton Roads from Fort Monroe is Fort Story, a sprawling reservation with a number of interesting features for the coast artillery enthusiast. Most of the historic period buildings were built as cantonment, temporary, or mobilization structures during either World War I or World War II. Sadly many of them have either been torn down or modified. Further down the coast, past Virginia Beach, is Camp Pendleton, a Virginia National Guard reservation. This post has a fine collection of WW II-era mobilization buildings.
American Seacoast Defenses

Fort Monroe

Coast Artillery School (TRADOC)

Quarters #1 (TRADOC)
Fort DuPont State Park, Delaware City, Delaware

This post has been used for a number of years by the state of Delaware as a record storage facility, a civil defense center, and a mental hospital. A portion by the water is now a state park. More than half of the buildings that were at this post still remain, including the barracks, a number of officer’s quarters, the administration building, storehouses, and more, which are still used by the state and are off limits to photography. The site has all but one of its batteries remaining and a large natural area along the shore of the Delaware River. A ferry ride from nearby Delaware City takes you to both Fort Delaware State Park on Pea Patch Island and on over to Fort Mott State Park in New Jersey.

Fort Mott State Park, Salem, New Jersey

A superb coast artillery park with an active program of restoration and interpretation. Fort Mott State Park features a number of preserved buildings, including a restored fire control tower, a restored administration building, and a newly restored Peace Magazine. The park contains a fine collection of unique Endicott-era batteries.
Gateway National Recreation Area, the Harbor Defenses of New York

The Fort Hancock reservation, now the Sandy Hook unit of Gateway National Recreation Area, contains the largest and most diverse set of tactical and non-tactical structures of the early modern era, 1890-1920. A number of interesting defenses were built here, from the uncompleted Third System fort, a unique gun-lift battery, an early mortar battery, through a large collection of Endicott-era gun batteries, post WW I batteries, and a Nike missile battery. The Army Proving Grounds were located here until 1920. Consequently, the Army built a large number of buildings and facilities at this site, most of which remain today. The contrast between the yellow-brick coast artillery buildings and the red-brick ordnance department buildings is particularly interesting. The reservation, except for a section used by the Coast Guard, was turned over to the National Park Service in the mid-1970s. The Park Service has worked to stabilize these structures over the past few years and seek adaptive reuses for them. One barracks has been converted into a research center, and they are seeking tenants to fix and repair the officer’s quarters. While not in as good shape as the collection of buildings in the Golden Gate National Recreation Area, the Sandy Hook collection preserves the essence of a large coast artillery post and has a number of unique features not found at any other post.
Fort Wadsworth, located at the Narrows on Staten Island, has a good collection of brick garrison structures of various dates and structures. However, many of these buildings are still in use by various government and defense agency and are not open to general public access. The highlight here is the Third System works of Fort Tomkins and Battery Weed. Several of the modern era batteries have been partially buried by the Navy. Across the Narrows in Brooklyn is Fort Hamilton, which is still an active Army post. Fort Hamilton also has an excellent collection of brick garrison structures but their modern use may restrict access to many of them. About half of the Third System work and all of the modern era batteries have been destroyed for road construction.
Fort Tilden, located at Rockaway Point, has a few remaining structures. Many of the buildings at this post were mobilization construction built during WW I and WW II, and most of these buildings have since been removed.

**Fort Totten, New York, New York**

Occupied by various Army and New York government units until just recently, this post has been generally off limits to the public. The military has just recently left and the City of New York is deciding what to do with reservation. This reservation has an excellent collection of non-tactical buildings, all in pretty good shape, plus the unfinished Third System fort and the partially overgrown Endicott-era batteries. It also has an excellent collection of early mine shore facilities. Permission may still be required to visit the fort as it is not generally open to the public. That may change, as one of the functions being considered by the City of New York is green-space parkland.
Fort Terry (Plum Island), Long Island Sound, NY

The Island was eventually transferred to the U.S. Department of Agriculture which used the location for infectious animal disease research. The buildings have been variously used and or neglected over the past 50 years, but a large number still remain. The Animal Disease Center is scheduled to be moved to a location in Kansas and the fate of Plum Island and the remains of Fort Terry have yet to be determined.

Fort H.G. Wright, Fisher’s Island, NY

Fishers Island has long been the private retreat of the residents there. The lands utilized for the harbor defense have been returned to private owners for the most part. Most of the officers quarters and few other buildings that remain have been tuned into private residences or other commercial uses. The island community does not encourage visitors.
Fort Andrews (Peddock’s Island), Boston Harbor Islands Park, Boston, MA

Bordering sheltered Hingham Bay, the 134 acres of Peddock’s Island comprise the most diverse island in Boston Harbor, encompassing four spit-connected, forested drumlin hills which include the abandoned, 30+ buildings of circa 1900 Fort Andrews, a colony of 47 circa1900 summer cottages, and a nature preserve. Peddock’s Island is accessible only by boat or helicopter, served in season by Bay State ferries, Cruise Lines from Long Wharf, Boston; Hewitt’s Cove, Hingham and the George’s Island water taxi or by private boat. The MDC acquired Peddock’s in 1970. The Fort has been deemed eligible for inclusion on the National Register of Historic Places. Fort Andrews is the only circa1900 military reservation in the Boston area to retain the preponderance of its historic permanent core of buildings. The complex is currently overgrown, with many of the buildings in an extremely dilapidated condition.

Fort Preble, South Portland, Maine

Fort Preble has most of its turn of the century buildings, although a number of them have been minimally altered and new buildings have been constructed among them. The buildings on the parade ground look much as they did at the turn of the century—the administration building, hospital and barracks. Behind these are the guard house (with an addition), fire station and bakery (which have been minimally altered). On the hill above the parade ground are four officers quarters, one of which has been turned into a hospitality
center. Below the officers quarters is a World War II mobilization building, a quartermaster storehouse (with a wood frame addition), a cable tank, mine storehouse, ordnance machine shop and ordnance storehouse. Fort Preble is now the campus of Southern Maine Community College and open to the public.

Officer's Quarters, Fort Preble, 2005 (MAB)

Fort Williams, Cape Elizabeth, Maine

Most of the buildings at Fort Williams have been demolished, but a few excellent structures survive—a Captain's Quarters, Bachelor Officers Quarters, Artillery Engineer's Storehouse, Militia Store House, Fire Station, Gun Shed (for 155 mm guns), fire station, the central power house, and transformer house. The Portland Head Light Museum devotes a room to the history of the fort, an interpretive center has been created in emplacement two of Battery Blair, and other surviving structures have interpretive signs.

Band Stand, Fort Williams, 2005 (MAB)
Fort Levett, Cushing Island, Maine

Several brick storehouses and officer quarters remain at this post along with the stable, the fire station, and the magnificent hospital building. The barracks have all been demolished. Fort Levett is owned by a private residential association and permission must be obtained to visit the site.

Fort McKinley, Great Diamond Island, Portland, Maine

Fort McKinley has an excellent collection of turn of the century brick buildings, including its administration building, officers quarters, non-commissioned officers quarters, barracks, guard house, hospital, bakery, fire station, post exchange, bowling alley, quartermaster storehouses, ordnance storehouse, ordnance shop, work shop, stable, water pumping station, stand pipes, central power house, school, and quartermaster wharf. The fort is on the national register of Historic Places and so the exterior of the buildings must be maintained. Fort McKinley is a private condominium association, but volunteers offer tours by appointment to small parties during the summer and maintain a small museum.
American Seacoast Defenses

Post Exchange, Fort McKinley, 2005 (MAB)

Bowling Alley, Fort McKinley, 2005 (MAB)

Gymnasium, Fort McKinley, 2005 (MAB)

NCO Quarters, Fort McKinley, 2005 (MAB)

Administration Building, Fort McKinley, 2005 (MAB)
Power Plant, Fort McKinley, 2005 (MAB)

Stable, Fort McKinley, 2005 (MAB)

Bakery, Fort McKinley, 2005 (MAB)
QM Storehouse, Fort McKinley, 2005 (MAB)

Work Shop, Fort McKinley, 2005 (MAB)

Ordnance Storehouse, Fort McKinley, 2005 (MAB)